Les conditions du développement durable des plantations villageoises de palmiers à huile au Cameroun.

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THÈSE

Pour obtenir le grade de

Docteur

Délivré par UNIVERSITE PAUL-VALERY MONTPELLIER 3

Préparée au sein de l'école doctorale : **ED 60** : Territoires, Temps, Sociétés et Développement

Et de l'unité de recherche **GRED** : Gouvernance, Risque, Environnement, Développement

Spécialité : Géographie et Aménagement de l'Espace

Présentée par Raymond Ndip NKONGHO

TITRE DE LA THESE

Les conditions du développement durable des plantations villageoises de palmiers à huile au Cameroon

Soutenue le 19 Novembre 2015 devant le jury composé de

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DOCTORAT DE L'UNIVERSITÉ PAUL VALÉRY-MONTPELLIER III -

Discipline: Géographie et Aménagement de l'espace

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November 2015

UNIVERSITÉ PAUL VALÉRY - MONTPELLIER III -
Arts et Lettres, Langues et Sciences Humaines et Sociales

ÉCOLE DOCTORALE
Territoires, Temps, Sociétés et Développement

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N° attribué par la bibliothèque

Tanyi-Ayuk and Nkongho family

Acknowledgements

I thank the Almighty God for the Grace of good health, wisdom, knowledge and understanding throughout the course of this study.

I'm indebted to my supervisor, Dr Patrice Levang (Director of research in IRD/CIFOR) who took the time off his busy schedule to mentor this thesis.

My gratitude goes to the authorities of Center for International Forestry Research (CIFOR), Institute for Development Research (IRD) and Center for International Cooperation on Agronomic Research for Development (CIRAD) for providing the funding through the SPOP (Sustainable Palm Oil Production) project. Special thanks to Dr Pablo Pacheco, Dina Hubudin, and Heru Komarudin all of CIFOR headquarters in Indonesia; Dr Cecile Bessou, Dr Alain Rival and Dr Laurène Feintrenie all of CIRAD. Dr Eba'a Atyi Richard, Dr Denis Sonwa, Florence, Philomène and other research students of CIFOR Cameroon. My regards also to Abdon Awono and Eric Ndjogui, fellow PhD students.

I am grateful to the authorities of the University of Buea who granted me leave of absence to enable me complete field research for my study in Indonesia and Malaysia; the Vice-Chancellor Prof. Nalova Lyonga, the Registrar Prof. Roland Ndip, the Director of Academic Affairs Prof. Mih Mathias, the Dean Faculty of Agriculture and Veterinary Medicine Prof. Pierre Sakwe, the former Vice-Dean in charge of Academic Affairs Dr Thomas Njock, the Head of Department for Agronomic and Applied Molecular Sciences Prof. Lum Fontem.

Special thanks to Mr Emmanuel Ngom, the National Coordinator for the development of the oil palm smallholder sector in the Ministry of Agriculture and Rural Development in Cameroon.

Special thanks to the authorities of Institut Pertanian Bogor (IPB), Indonesia and the Federal Land Development Authorithy (FELDA), Malaysia and all company managers and smallholder farmers in Cameroon, Indonesia and Malaysia, for their openness during the field research for my study.

To other friends and well wishers for their prayers and support.

Abstract

The collapse of the FONADER-sponsored partnership between oil palm smallholders and major agro-industries in Cameroon together with the structural adjustment program, the devaluation of the Franc CFA, the economic crises, as well as the fall in the international market prices for cocoa and coffee, led to the emergence of independent oil palm producers in the country. These oil palm planters have been grappling with the management of their plantations and the processing of their FFB with the use of artisanal mills. But the numerous difficulties faced by these smallholders are translated into very low yields registered in their plantations.

In Cameroon, four of the seven palm oil production basins carved out during the FONADER partnership scheme were selected as study sites. They included Eseka in the Center Region, Dibombari in the Littoral Region, Muyuka and Lobe in the Southwest Region. The agro-industries were SOCAPALM, Cameroon Development Corporation (CDC) and Pamol.

In Malaysia and Indonesia, the study sites were the FELDA scheme of Besout in the district of Batang Padang, the PIR and KKPA scheme of PT SAL in the district of Bungo, the KKPA scheme of PT Megasawindo and PT Musim Mas in the district of Bungo and Pelalawan. Data collection was organized through the administration of semi-guided questionnaires, secondary data sourcing, personal communication with different stakeholders in the sector, focus group discussions, internet and library search, as well as field observation visits.

The study looked at the origin and evolution of partnership schemes between oil palm smallholders and agro-industries, what was right, what went wrong in the course of time, and why most partnerships collapsed. The study further examined the strengths and weaknesses of today's independent oil palm smallholders and the reasons why these smallholders prefer to process their FFB in artisanal mills despite the presence of agro-industrial mills in the vicinity of their plantations. Further inspiration was drawn from the positive and negative experiences of major schemes in Malaysia and Indonesia which have boosted production in their oil palm sectors through case studies. A participatory prospective analysis workshop was organize in Cameroon on the future of the oil palm sector, as a way to generate policy recommendations on the way forward for future partnership schemes between oil palm smallholders and agro-industries in the country.

In the light of the recent interest expressed by new agro-industries to invest in the oil palm sector in Cameroon, and the decision by present companies to expand their surface areas, the study notes that in order to mitigate some of the social and environmental crises that result from land conflicts and forest degradation, the most sustainable approach to develop the sector will be to revamp win-win partnerships between smallholder oil palm planters and agro-industries.

Keywords: Partnership, FONADER, FELDA, PIR, KKPA, agro-industry, smallholder, outgrower schemes.

Resumé

L'effondrement du FONADER (Fonds national de développement rural) qui avait initié les premiers partenariats entre petits exploitants de palmiers à huile et agro-industries au Cameroun, les programmes d'ajustement structurels, la dévaluation du Franc CFA, les crises économiques, et la baisse du prix du cacao et du café sur le marché international, ont conduit à l'émergence d'une nouvelle catégorie de producteurs d'huile de palme indépendants. Ces planteurs de palmiers à huile se sont retrouvés sans soutien technique et ont confié le traitement de leurs régimes aux moulins artisanaux. Les nombreuses difficultés rencontrées par ces petits exploitants se sont traduites par de très faibles rendements enregistrés dans leurs plantations.

Au Cameroun, quatre des sept bassins de production d'huile de palme développés pendant le régime de partenariat FONADER ont été sélectionnés comme sites d'étude. Il s'agit d'Eseka dans la région Centre, Dibombari dans la région du Littoral, Muyuka et Lobe dans la région Sud-Ouest. Les agro-industries respectives sont SOCAPALM, CDC et Pamol.

En Malaisie et en Indonésie, les sites de l'étude comprennent le site FELDA de Besout dans le district de Batang Padang, les modèles PIR et KKPA de PT. SAL dans le district de Bungo, le modèle KKPA de PT. Megasawindo et PT. Musim Mas dans les districts de Bungo et Pelalawan respectivement. La collecte des données a été organisée par l'administration de questionnaires et des interviews répétés avec les différents intervenants dans le secteur, des discussions de groupes, des recherches sur Internet et dans les bibliothèques des instituts de recherche spécialisés, ainsi que par des visites d'observation sur le terrain.

L'étude porte sur l'origine et l'évolution des régimes de partenariat entre les petits exploitants d'huile de palme et les agro-industries, les points positifs et négatifs des divers modèles testés, et les raisons à l'origine des succès et des échecs enregistrés. L'étude a examiné plus en profondeur les forces et les faiblesses des petits exploitants indépendants de palmiers à huile d'aujourd'hui et les raisons pour lesquelles ces petits exploitants préfèrent traiter leurs régimes dans les moulins artisanaux malgré la présence de moulins industriels plus performants à proximité de leurs plantations. L'étude a en outre cherché l'inspiration auprès des expériences positives et négatives de grands projets en Malaisie et en Indonésie, les deux géants de la production mondiale d'huile de palme à travers des études de cas. Enfin, une approche participative prospective sur l'avenir du secteur de l'huile de palme organisée dans trois ateliers au Cameroun, a permis de générer des recommandations de politique sur la voie à suivre pour développer des partenariats équitables et durables entre les petits exploitants de palmiers à huile et les agro-industries au Cameroun.

Suite à l'intérêt récent manifesté par de nouvelles agro-industries à investir dans le secteur du palmier à huile au Cameroun, et la décision des entreprises déjà établies d'étendre leurs superficies, l'étude signale que pour atténuer les crises sociales et environnementales résultant des conflits fonciers et de la dégradation des forêts, l'approche la plus durable pour développer le secteur serait de réorganiser des partenariats gagnant-gagnant entre les planteurs de palmiers à huile et les agro-industries.

Mots-clés: partenariat, FONADER, FELDA, PIR, KKPA, agro-industrie, petits exploitants, agriculture contractuelle.

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List of Acronyms

BCUF, Bakweri Cooperative Union of Farmers

BNI, Banque Nationale Indonésienne

BOD, Biochemical Oxygen Demand

BRI, Bank Rakyat Indonesia

CDC, Cameroon Development Cooperation

CIFOR, Center for International Forestry Research

CIRAD, Centre de Coopération Internationale en Recherche Agronomique pour le Développement

CNPS, Caisse Nationale de Prévoyance Sociale

COMDEV, Commonwealth Development Cooperation

CPO, Crude Palm Oil

CSR, Corporate Social Responsibility

DO, Delivery Order

EOER, Expected Oil Extraction Rate

EU-RED, European Union Renewable Energy Directive

EUROS, Currency for countries belonging to the European Union

FCFA, Currency of CEMAC countries

FELCRA, Federal Land Consolidation and Rehabilitation Agency

FELDA, Federal Land Development Authority

FFB, Fresh Fruit Bunches

FONADER, Fonds National pour le Développement Rural

FPIC, Free Prior and Informed Consent

GIC, Groupe D′initiative Commune

GSA, Group Settlement Act

HCVF, High Conservation Value Forest

IFC, International Finance Corporation

IPM, Intergrated Pest Management

IRAD, Institut de Recherche pour le Développement Agricole

IRHO, Institut de Recherche pour les Huiles et Oléagineux

ISCC, International Sustainable Carbon Certification

ISPO, Indonesian Sustainable Palm Oil

IUCN, International Union for the Conservation of Nature

PKO, Palm Kernel Oil

KWh, Kilowatt hour

MINADER, Ministère de l'Agriculture et du Développement Rural

MINEP, Ministère de l'Environnement et de la Protection de la Nature

MINEPAT, Ministère de l'Economie, de la Planification et de l′Aménagement du Territoire

MPOB, Malaysian Palm Oil Board

NAERP, National Agriculture Extension and Research Program

NES, Nucleus Estate Smallholder

NGO, Non-Governmental Oganization

NIFOR, Nigerian Institute for Oil Palm Research

NTFP, Non-Timber Forest Product

OER, Oil Extraction Rate

POME, Palm Oil Mill Effluent

RED, Renewable Energy Directive

REDD, Reducing Emissions from Deforestation and Forest Degradation

REPARAC, Projet pour le Renforcement des Partenariats dans la Recherche Agronomique au Cameroun

RFS, Renewable Fuel Standard

RISDA, Rubber Institute Smallholder Development Agency

ROI, Return on Investment

RSPO, Roundable for Sustainable Palm Oil

SAFACAM, Société Africaine Forestière et Agricole du Cameroun

SCAB, Société Coopérative Agri-Business

SEIA Social and Environmental Impact Assessment

SOC, Sustainable Oils Cameroon

SLDB, Sabah Land Development Board

SOCAPALM, Société Camerounaise de Palmeraies

SPFS, Société des Palmeraies de la Ferme Suisse

Index of Malaysian and Indonesian terms

Badan Pertanahan Nasional, Department of national land affairs

Bupati, District head

Dinas Kehutanan, District office in charge of forestry

Dinas Perkebunan, District office in charge of plantations

GAPKI, Association of oil palm companies of Indonesia

Hak Guna Usaha, Long term lease

Inti dan Plasma, Nucleus estate and plasma

Inti, Nucleus estate plantation

Izin Lokasi, Location permit

Izin Prinsip, A permit that indicates the company has been allowed to invest

Izin Usaha Perkebunan, Permit for plantation business

JKKR, Scheme Management Committee

Kapling, Registered piece of land; in oil palm developement the size of a *kapling* is usually 2 ha.

Kartu undian kapling, kapling toss card

Kelompok, Group

Kemitraan, Partnership

KKPA, *Koperasi Kredit Primer untuk Anggota*' or Primary Cooperative Credit for Members

KPF, *Koperasi Permodalan Felda* or Felda Investment Cooperative

KUD, *Koperasi Unit Desa* or Village cooperative unit

MSP, Megasawindo Perkasa

Nomor Pokok Wajib Pajak, Tax registration number

Permentan, Ministerial Decree

PIR, *Perkebunan Inti Rakyat*' or Nucleus Estate and Smallholder Plantations

PT, *Perseroan Terbatas* or Limited Liability Company

Ringgit (MYR), Malaysian currency

Rupiah (IDR), Indonesian currency

Skala, Scale

Surat Hak Milik or *Sertifikat Lahan*, Land title

Surat Keterangan Kepemilikan Tanah, A document that proves the land belongs to a given individual in the absence of an official title.

Surat Pernyataan Penyerahan Lahan Garapan, A letter testifying the handing over of a given quantity of land by an individual to the company in order to join the plasma scheme.

Surat Tanda Peserta Plasma, Letter of plasma membership

TBS Luar, Money from the sale of FFB from outside

CHAPTER ONE

GENERAL INTRODUCTION

1.1 BACKGROUND TO THE STUDY

1.1.1 Origin and distribution of oil palm

The oil palm (*Elaeis guineensis* Jacq.) originated in the humid lowland tropics of West Africa (Onwueme, 1979). The plant is not shade-tolerant and as such cannot thrive in the dense forest with other fast growing forest trees but is found instead in the forest galleries bordering the major rivers of West and Central Africa (Hartley, 1988). From its centre of origin, the oil palm has spread to other regions with similar climates, notably in South America and Southeast Asia (Jacquemard, 1998).

1.1.2 Botany of oil palm

Elaeis guineeneis Jacq is a monocotyledon of the order Palmales, family Palmae, subfamily Cocoideae and tribe Cocoineae. The genus *Elaeis* includes two other species besides *E. guineensis*, namely *E. odora* distinguished from the others by its bisexual inflorescence and the American oil palm *E. oleifera*, distinguished by its procumbent stipe, and occurs in the tropical regions of South and Central America (Hartley, 1988; Raemaekers, 2001).

Based on the variability of the shell thickness, *E. guineensis* has been classified into three varieties (Jacquemard, 1998):

- Dura, with a thick shell (> 2 mm) and a relatively low pulp content (35 – 70 %).
- Pisifera, which is shell-less and easily rots.
- Tenera, a natural hybrid of the Dura and Pisifera, characterized by a thin shell (< 2 mm) with a ring of fibre and a very high pulp content (≥ 90 %).

Meanwhile the fruits for each of the three types mentioned above come in three kinds of colour: *Nigriscens*, *Virescens* and *Albescens* fruit types.

The cultivation of oil palm begins with the artificial germination of the seeds at 39 – 40°C for 60 to 80 days. This is followed by 10 - 12 months in the nursery before the young seedlings are ready for field planting. The oil palm starts bearing fruit at about 3 years and approaches

maturity between 7 – 15 years. The economic life of a plantation varies from 20 to 30 years, according to local conditions.

The principal vegetative components of a mature palm are the roots, trunk and foliage. Four different morphological types of roots have been defined: primary, secondary, tertiary and quaternary roots (Turner and Gillbanks, 2003). Primary roots extend either downward from the base of the palm or radially. The descending roots are for anchorage, with little or no role in the absorption of water and nutrients. From these primaries, secondary roots ascend and descend in approximately equal numbers. The secondary roots in turn give rise to horizontally growing tertiaries from which a mass of quaternary roots develops. The latter differ from the others in that, they are not lignified, bear no root hairs and some contain pneumatodes which aid in ventilation of underground quaternary roots as well as those found in poorly drained soils (Hartley, 1988).

The root zone of oil palm is 1 – 3 m deep (Chang and Chow, 1985; Rey et al., 1991), provided it encounters no obstacle to its development and if there is no water table (Peralta et al*.,* 1985). Indeed, only the surface roots are relevant for uptake of nutrients while the deeper roots are essentially for anchorage (Chang and Chow, 1985). Significant root development occurs within the avenues between palm row and roots of all classes, showing positive tropism towards superior conditions of water and nutrient supply (Turner and Gillbanks, 2003). According to Tailliez (1971) and Caliman et al. (1990) most of the absorption of mineral nutrients takes place in the top 20 - 30 cm of the soil. Under normal growing conditions, the greatest quantities of absorptive roots are found between a soil depth of 20 to 60 cm (Hartley, 1988; Raemaeker, 2001) and within 3.5 - 4.5 m radius leading to a "poaching" effect (Daniel, 1984). Most of the absorption of nutrients occurs throughout the quaternaries and tips of primaries, secondaries and tertiaries (Tailliez, 1971; Turner and Gillbanks, 2003).

The trunk remains as a single unit, bearing a crown of fronds and inflorescences derived from a single meristem located on the stem apex. The rate of trunk elongation is influenced by both the progeny's genotype and environmental factors (Turner and Gillbanks, 2003). There is comparatively little trunk increment until when the palm is 3 years old. Internally the palm is very fibrous, with the vascular tissues providing both mechanical support and nutrient conduction (Jacquemard, 1998).

Under normal estate conditions the oil palm produces about 24 fronds per year depending on age and environment, and the trunk bears a crown of 40 to 56 fronds (Hartley 1988; Turner and Gillbank, 2003). Most mature palms produce 2 - 3 new fronds each month, but a higher production rate of 3 - 4 new fronds per month could be observed on younger palms (Turner and Gillbanks, 2003).

Differences in rainfall influence the rate of frond production and thus yield (Chang et al., 1988). During dry conditions, the rate of expansion of new fronds is reduced with new fronds appearing as clusters of unopened spears (Villalobos et al., 1992). With the onset of the rains, leaves open rapidly to produce a flush of new fronds. These fronds are arranged in the form of spirals on the stem, with eight fronds to each complete sequence round the stem. Most palms show a "right-handed" phyllotaxis, a small number are "left-handed" and occasionally palms fit neither configuration. There is no relationship between yield and direction of the foliar spiral (Turner and Gillbank, 2003). Each mature frond comprises a rachis, pinnae and spines. The frond length varies both genetically and with growing conditions (Jacquemard, 1998).

In mature palms, leaf area increases in successive fronds until they are about 10 years old, with the rate of increase varying considerably between environments (Peralta et al., 1985). The importance of foliage is recognized since it is the site of photosynthesis and there is much evidence that yield is primarily related to the assimilative capacity and leaf area of the palm (Corley and Breure, 1981; Chang et al*.,* 1988).

The oil palm is monoecious, bearing male and female inflorescences simultaneously, although inflorescences are normally unisexual (Hartley 1988). Mixed inflorescences, which are relatively rare, appear when the tree switches from male to female cycle or vice versa. Each cycle lasts for about 3 – 6 months and is affected by both physiological and environmental factors (Raemaekers, 2001). The oil palm normally starts flowering in its third year. The male inflorescence is composed of a thick central axis carrying some 200 spikes, on each of which develop some 700 - 800 tightly packed flowers. Two sheaths or spathes, which open before the flowering proper, surround the entire male inflorescence. The female inflorescence has a shorter peduncle, which extends into a thick main axis, the rachis, and bears the spikes with flowers.

Sex ratio is higher during the early years of production, gradually declining until it becomes fairly even. Sex ratio is the factor most strongly influenced by adverse environmental conditions particularly those of climate and nutrition. Excessive drought can lead to complete

abortion of all inflorescence buds, resulting in the appearance of temporary sterile months (Ekanayaka et al., 1990). It takes a time lag of 5 – 6 months between pollination and the production of fruit bunches. The main natural pollinating agent in West Africa is the *Elaeidobius* weevil (Syed, 1982; Griffiths and Fairhurst, 2003; Kuruvilla et al., 2003).

1.1.2.1 Effect of soil and climate on growth and yield of oil palm

Oil palm growth and yield largely depend on soil type (physical and chemical components) as well as the climate (Green, 1972; Ng, 1986; Ngoko et al., 2004). Most oil palm is grown within the equatorial tropics (about 10°N and S of the Equator), principally in Southeast Asia, Africa and Latin America (Turner and Gillbank, 2003).

Oil palm can grow on a wide range of soil types. It requires a deep, permeable soil and a level or slightly undulating terrain not more than 500 m above sea level (Hartley, 1988; Jacquemard, 1998). Water-logged, extremely sandy soils, highly lateritic, stony as well as peaty soils should be avoided (Rey et al., 1991; Villalobos et al., 1992); while coastal marine alluvial clays, soils of volcanic origin and other coastal alluviums are encouraged (Hartley, 1988). In fact, the soil physical characteristics (texture, depth, permeability and water table) may have a more decisive effect on yield than soil chemical properties (Peralta et al., 1985; Raemaekers, 2001). The ability of the soil to hold positively-charged ions (Ca^{2+}, Mg^{2+}, K^{+}) is called the cation exchange capacity (Ricklefs, 1983; Gibbon and Pain, 1985). These ions leave the micelle, dissolve in soil water after being displaced by H^{+}, and are taken up by the roots or leached to inner depths.

The oil palm is adapted to soils with a pH close to neutral, but can cope with acid soils of pH 4 - 5 (Awah et al., 1984; Bridges, 1997) of a high water-holding capacity (Onweume, 1979).

Rainfall is the most critical and decisive factor limiting oil palm development and production. An annual amount of 2000 mm, distributed evenly throughout the year and with no pronounced dry season is essential for maximum yield (Rey et al., 1998; Nony et al., 1999). Despite the negative effects of rainfall on pollination, pollen liberation and pollen viability, rain has positive effects on frond production, bunch number, sex differentiation and floral abortion (Corley, 1973; Francisco et al., 1997). Optimum oil palm development and yield requires a mean monthly temperature of 29° to 32°C and a minimum range of 22 to 24°C (Hartley, 1988).

An estimated 1,800 hours of insolation/year and at least 5 h/day are required for optimum expression of yield potentials, whilst less than 1,500 h/year is considered limiting (Quencez, 1982; Olivin, 1986). Solar radiation enhances productivity, primarily by powering photosynthesis and eventual dry matter production. Extremely high atmospheric humidity causes stomatal closure, thus limiting photosynthesis, dry matter production and yield. It is not advisable to establish palm plantations in areas subjected to high winds like cyclones.

Apart from climate and the soil's physical and chemical properties already indicated, the oil palm is also affected by diseases and pests. The leaf miner (*Coelaenomenodera minuta* uh.) is the worst enemy of the oil palm in West Africa (Lecoustre and de Reffye, 1986), while fungal diseases caused by *Fusarium oxysporum* adversely affect replants leading to great yield losses (Renard and Quillec*,* 1983).

Other factors which affect oil palm yields include the planting density, genotype of the planting material, lack of suitable insect pollinators, as well as farm management practice (Breure, 1982; Foster and Chang, 1989; Quences, 1994).

1.1.3 Global production and trade in palm oil

The two main products of the oil palm are palm oil derived from the mesocarp of the fruit and palm kernel oil (locally called "manyanga"), extracted from the endosperm or kernel. The world production of palm oil has shown astonishing growth since 1984 (Fairhurst, 2003). By mid-eighties, oil palm production stood at 10 % of the world's total oils and fat (Ng, 1986). As earlier mentioned, this commodity that was previousely the world's second most important vegetable oil after Soya oils (Fairhurst, 2003; Ooi, 2004), became the leading vegetable oil in terms of production as from 2006 until today. The key to the growth of palm oil production is found in S.E. Asia, which accounts for 87% of the world's total production. Africa, which led the scene until the early 1970s, now accounts for only 4 % of the global production (USDA, 2014). The pattern of palm oil consumption has equally altered considerably over the past two decades. Once heavily concentrated in Europe and Africa, demand has risen throughout Asia. The price of palm oil on the world market tends to fluctuate, with the price of soya oils (*Glycine max*) being a reference point (Sourou, 1987).

1.1.4 Uses of palm oil and oil palm by-products

The oil palm has several uses. The palm oil and kernel oil are both used in the food and oleochemical industries. About 90 % of palm oil is used in foods and confectionery products,

principally for frying. The pressed cake of palm kernel is a good source of livestock feed (Berger and Ong, 1985; Soh et al., 1994; Graille and Pina, 1999). The tree produces palm wine, which is a good source of vitamin B-complex. The fronds are used for temporary roofing while the petiole and rachis are used for fencing. Refuse like empty fruit bunches are good sources of organic fertilizer and also a suitable substrate for mushroom (*Agaricus* spp.) cultivation. While palm oil mill effluent (POME) is a source of bio-energy. Waste can also pose a threat to the environment especially when disposed in uncontrolled manner.

1.1.5 The concept of sustainable palm oil production

Sustainable palm oil production is a holistic approach in development that takes care of the needs of the present generation without undermining the needs of the future generation. It takes into cognizance the environmental, social and economic perspectives in its development strategy. That is to say, an agricultural production that is environmentally friendly, socially acceptable and economically viable.

The dangers of un-sustainable palm oil production systems will be the destruction of forest, which is home to the rich biodiversity of plant and animal/key stone species, the release of carbon into the atmosphere which will eventually lead to global warming and climate change, malfunctioning of the hydrological cycle, social unrest amongst indigenous and local populations with agro-industrial companies due to land conflict, pollution due to the use of non-homologated pesticides, food security is threatened for present and future generation, non-respect of human rights, and poverty, etc.

1.1.6 Typology of contract farming

According to Fallmeier (2012), there are five different models of contract farming. These include the centralized model, the nucleus estate model, the multipartite model, the informal model and lastly the intermediary model.

- The centralized model is the neoclassical model of contract farming in which a transnational corporation buys produce from a large number of small farmers. In this model, there is strict vertical coordination, which means that quality is tightly controlled and quantity is determined at the beginning of the growing season. Products produced and traded under this model are those requiring a high degree of processing.
- The nucleus estate model differs from the centralized model in that the contractor not only sources products from out-growers, but also owns a nucleus estate. The

similarities in both models is that farmers may have the opportunity to get technical assistance, inputs and credit to boost their production in quantity and quality.

- In the multipartite model, the contractor is a joint venture between a statutory entity and a private company (such as transnational corporation). Public or private providers of credit, extension services and inputs may be part of the arrangement. This model has often been used by developing countries as part of the liberalization process.
- The informal model is characterized by individual entrepreneurs or small companies contracting informally with farmers on a seasonal basis. This model provides fewer options for vertical coordination than a more formal contract. This model is used for crops that require only a minimal amount of processing.
- In the intermediary model, a formal contract is signed between a processor and a middleman, who then informally contracts with a number of farmers. The model has both elements of the centralized and the informal models. Vertical coordination is more difficult in this model as there is no direct link between the principal contractor and the farmer.

1.2 CONTEXT OF THE STUDY

The model of agricultural development used in any project can either mar or make the project. Plantation agriculture is one of those activities that "eats" up enormous land, destroys the forest and pollutes water ways if sustainable measures are not put in place. Many years ago, very little was done to implement sustainable agricultural practices on the field, especially in the oil palm sector.

In the last decade, there has been a lot of intervention from government, conservation and civil society organizations on the need for agriculture and oil palm development in particular to be done sustainably. Today science has proven that sustainable agriculture is the only possibility to guarantee the needs of today's generation without jeopardizing the needs of the future generation. This is a holistic approach in agriculture that takes into account the social, environmental and economic perspective in its development strategy.

Though oil palm originated in tropical countries of West and Central Africa, these countries are still to benefit from the full potentials of the two main commodities, palm oil and kernel oil, let alone the by-products after processing. The pollinating insect (*Elaeidobius kamerunicus*), the tenera breed known at the time as "Lisombe" palm were all discovered in

tropical Africa, but the paradox is that these countries are today importers of palm oil from countries in which oil palm is considered an exotic crop. Africa that led the scene in terms of production and export until the early 70s is today a net importer of palm oil.

The development plans of most African countries put in place for the oil palm sector immediately after independence in the 1960s, brought a lot of success in the oil palm industry in terms of surface areas that were developed not only for agro-industries but also for oil palm smallholders, the quality of planting materials utilized, the level of technical upkeep of their plantations, and these resulted in better yields, as was the case with the FONADER (Fonds national de développement rural) scheme in Cameroon. It is within the FONADER period that enormous successes were achieved in the smallholder oil palm sector in Cameroon. But there were also some lapses in the planning and execution of this development plan. The collapse of the FONADER led to the collapse of the partnership between oil palm smallholders and agro-industries. The smallholders of today are left to themselves and despite several government efforts to revamp the sector through the smallholder department in the Ministry of Agriculture and Rural Development, in collaboration with some agencies, there is still much to be done. Not all oil palm production basins are covered, even in areas where these projects intervene, the extent of this coverage in size and numbers is quite small when compared to the number of oil palm smallholders on the field.

Today these independent oil palm smallholders are facing a lot of problems; some of the problems include little access to quality planting materials, inputs, credit from financial institutions, market. This inevitably translates into very poor yields of less than 1 t CPO/ha/year (Nkongho et al., 2014). On the contrary their smallholder counterparts in Indonesia and Malaysia in partnership with agro-industries are able to record 3.5 to 4 t CPO/ha/year and about 40% of palm oil produced in both countries comes from smallholders. The total surface area for Cameroonian smallholders is nearly two times bigger than for agro-industries, but they register only 1/3 of the total fresh fruit bunches (FFB) production.

The two giants in the oil palm sector, Indonesia and Malaysia, have also put in place several development plans for the oil palm sector in their respective countries. The governments of these countries did not only use oil palm to develop the agro-industrial sector, but they also used oil palm to develop smallholder plantations for the rural masses, thus the crop greatly helped in poverty alleviation. The governments of these two countries were quite flexible and

innovative in their development plans for the oil palm sector. In Malaysia for example, the government as far back as the mid-1950s used rubber and later oil palm to develop smallholdings for the settler populations who were beneficiaries of the FELDA (Federal Land Development Authority) scheme. In Indonesia, the government used the PIR ('*Perkebunan Inti Rakyat*' or *Nucleus* Estate and Smallholder Plantations) scheme to develop oil palm smallholdings for transmigrant and local populations. The KKPA ('*Koperasi Kredit Primer untuk Anggota*' or Primary Cooperative Credit for Members) scheme, to develop oil palm smallholdings for the local population and to ease social tension between the local population and the transmigrant population. Everything wasn't perfect in these schemes, far from that. But the two governments were quite flexible and innovative in their decisions. For example, the Malaysian government put in place 5-year development plans for the FELDA scheme, and did all it could to make sure that the targets for each development phase were met. While the Indonesian government initially subsidized the development of schemes, when faced with the Asian crisis, the government decided to play a regulatory role in later years. It is not surprising that today these two countries alone produce about 87% of the world's total palm oil.

Because of increased awareness and pressure from certification bodies like RSPO (Round Table for Sustainable Palm Oil), ISPO (Indonesian Sustainable Palm Oil) and downstream companies that use palm oil as their raw material, of the need to implement sustainable practices in the oil palm sector in these two countries, one sees, a reduction in the extension rate of these companies, since they are forced to comply with sustainable principles enforced either by national governments or international organizations.

Some of these companies have tried to move to Cameroon and some other tropical African countries to develop oil palm plantations due to increased global demand for crude palm oil. These companies are interested in developing oil palm plantations because of favorable climate, abundant land, cheap labour, local market, and weak governance. In Cameroon for example, since 2009, a total of about 1 million hectares of land was requested by agro-industries mostly from Southeast Asia to develop oil palm plantations (Hoyle and Levang, 2012). Even if the requested surface areas were far from being converted into oil palm plantations, this is clearly an "eye opener" concerning the oil palm sector in the country, that things shall not stay the same in the future. The question that arises is which development model should be used for the oil palm sector in Cameroon? Cameroon has already experienced all three main development models for the oil palm sector. These include

developing oil palm through independent smallholdings, developing oil palm through agro-industrial plantations, and developing oil palm through partnerships between oil palm smallholders and agro-industries. While agro-industries are efficient in terms of better machinery, processing equipment, technical knowledge and management prerogatives, which translates into better yields and higher extraction efficiency, family farming is better in terms of job creation, poverty alleviation and social justice. But then a formula for a win-win partnership between agro-industries and oil palm smallholders is yet to be developed (Djouma et al., 2014).

1.3 PROBLEM STATEMENT

- The smallholder oil palm sector is facing serious production problems with very low yields, aging oil palm plantations, high cost of fertilizer & chitted seeds, lack of technical information related to the cultivation of the crop, absence of credit institutions with cheap interest rates and intangible support from government, bad state of farm to market roads.
- The absence of a model to develop the oil palm sector in Cameroon despite the coming of some foreign oil palm companies. It is only in 2013 that the government put in place a committee to develop a national strategy document for the oil palm sector in Cameroon.
- The present social tension between the local populations and the already established agro-industries makes one to suppose that joint venture between the smallholders and agro-industries could provide better working conditions for both parties, improve on the livelihood of the locals and help ease social tension.
- The current awareness by local and international conservation organizations on the need to preserve the forest in order to reduce the impact of deforestation on biodiversity loss and global warming gives added advantage of the need to promote the development of the oil palm smallholder sector.
- Cameroon is also a net importer of crude palm oil; 50,000 tons in 2011, and 80,000 tons in 2012, and about 100,000 tons in 2013. Although the smallholder sector occupies 2/3 of the planted surface area of 170,000 ha, it only produces 1/3 of total crude palm oil (CPO).

1.4 OBJECTIVES OF THE STUDY

1.4.1 Overall objective

This study has as overall objective to take a retrospective look at the oil palm sector in general and the smallholder oil palm sector in particular, their partnerships with agro-industries, to see where improvements were made over the years and where there is a need for progress. The study also draws inspiration from the positive and negative lessons learnt from Southeast Asian partnership schemes, as a way to redress the Cameroonian oil palm landscape.

1.4.2 Specific objectives

1. To study the history of partnerships between agro-industry and oil palm smallholders in Cameroon, (Chapter 2).
2. To examine the strengths and weaknesses of the smallholder oil palm sector in Cameroon, (Chapter 3).
3. To review the artisanal palm oil milling in Cameroon, (Chapter 4).
4. To study the win-win partnership between agro-industries and oil palm smallholders: Lessons from Southeast Asian experiences, (Chapter 5).
5. To propose a win-win partnership between agro-industries and oil palm smallholders in Cameroon, (Chapter 6).

1.5 METHODOLOGY

Cameroon

In Cameroon, the study was carried out in four out of the seven oil palm production basins that have a long-standing relationship with the agro-industrial companies. These basins include Eseka, Dibombari, located in Nyong et Kelle and Mungo divisions respectively of the Center and Littoral regions, and Muyuka, Lobe located in Fako and Ndian divisions respectively of the Southwest region. The agro-industries in question include Pamol Plantations, Cameroon Development Corporation (CDC) and SOCAPALM. The objective of the research was to study the relationship existing in the past and at present between oil palm smallholders in four (Eseka, Dibombari, Muyuka and Lobe) of the seven palm oil production basins carved out during the FONADER oil palm development plan in 1978 to 1990 and the major agro-industrries.

The first priority was to study the history of partnership between agro-industries and oil palm smallholders and the reasons for the collapse of this partnership. Secondly we decided to characterize smallholders into elites, company workers, non-native and native, based on criteria like social status, income levels, place of origin, source of livelihood, past and present work, etc. The educational level, age , as well as the gender of smallholders were also taken into consideration. The extent of encroachment of smallholder plantations into the primary forest and the yield and income from oil palm cultivation. Thirdly we also wanted to know why smallholders practice artisanal milling, the types of artisanal mills used, the extraction rates of these mills and the benefits derived from the processing and selling of palm oil, instead of supplying FFB to agro-industrial mills. Lastly, we also carried out a participatory prospective analysis workshop with different stakeholders involved in the oil palm sector to get their opinion on which development model they thought was most appropriate and sustainable for the oil palm sector in Cameroon.

Malaysia and Indonesia

The objective of studying the Malaysian FELDA and the Indonesian PIR and KKPA schemes was to learn the positive and negative experiences recorded in the management of these schemes in order to generate policy recommendations on the model of a partnership between smallholders and agro-industries of the oil palm sector in Cameroon. We studied the partnership models that have boosted the palm oil sector in these two countries.

In Malaysia, the study was carried out in one of the FELDA schemes in Besout, in the State of Perak, district of Batang Padang and sub-district of Sungkai. In Indonesia, the study was carried out in Jambi and Riau provinces. The companies studied include PT SAL and PT Megasawindo (Jambi), located in Bungo District, Pelepat sub-district, and PT Musim Mas (Riau), located in Palalawan district, Sorek sub-district. Company officials, scheme smallholders, independent smallholders, middlemen, as well as district level authorities were all sampled in the course of the study

The FELDA scheme of Besout in Malaysia is one of the oldest schemes that was developed in 1974. The scheme presently has estate plantings, settlers replanting managed by FELDA technoplant and those managed by individual settlers. In relation to schemes in Indonesia, the first company/scheme studied, PT SAL has no *inti* plantation and is not yet certified with RSPO and ISPO, amongst others. This implies the working relationship between this company and the transmigrant farmers of PIR and KKPA scheme is such that they have to

supply the totality of their FFB to the company mill. PT Megasawindo was at the time of the study not also certified with RSPO and ISPO or any certification body. The scheme under operation here is the KKPA scheme between farmers and Megasawindo. When compared to PT SAL, Megasawindo also owns an *inti* plantation, in addition to the supply of FFB from *plasma* plantations. PT Musim Mas Sorek is certified with both RSPO and ISPO amongst others. The certification with RSPO is not only limited at the level of the company but also extended to its KKPA scheme.

Data collection was done through literature review on internet and in libraries, secondary data in research institutions, universities, agro-industrial companies, government institutions, etc., the administration of semi-structured questionnaires to oil palm smallholders, company managers and supervisors, government officials, social and environmental NGO's, artisanal and industrial millers as well as palm oil wholesalers and retailers . Focus group discussions were also carried out involving smallholders, company managers, and officials of the public and private sectors, and civil society organizations. Field observations were also done in smallholders and agro-industrial plantation, as well as their artisanal and industrial mills respectively.

1.6 RESEARCH QUESTION

- Can an equitable/win-win partnership between oil palm smallholders and agro-industries be used to address the current challenges facing smallholders and the Cameroonian oil palm sector in general?

Why a partnership between agro-industries and oil palm smallholders?

- Partnership between oil palm smallholders and agro-industries can lead to an increase in the utilization of "degraded" land and reduce pressure on the primary forest.
- Partnership between oil palm smallholders and agro-industries can lead to a reduction in social tension faced by the present and new oil palm companies, which hinders their expansion and establishment respectively.
- Partnership between oil palm smallholders and agro-industries can lead to direct empowerment of the local population, thus helping in reducing poverty.
- Partnership between oil palm smallholders and agro-industries can reduce the level of fruit theft currently experienced by the agro-industries.

2 CHAPTER TWO

HISTORY OF PARTNERSHIP BETWEEN AGRO-INDUSTRIES AND OIL PALM SMALLHOLDERS IN CAMEROON

2.1 ABSTRACT

The chapter explores the origin and changes in partnership agreements established between agro-industries and oil palm smallholders in Cameroon. The different forms of partnership which have existed over the years in the oil palm sector until now are assessed, notably the FONADER-sponsored smallholder scheme (1978 to 1991) and more recently the Afriland First Bank sponsored *villagisation* project of SOCAPALM Eseka (2007/2008 to present). Special attention is given to the factors and conditions that have influenced the outcomes of these partnerships, specifically the failure of the FONADER-sponsored smallholder scheme. It is concluded that with the current absence of steady support from the government to oil palm smallholders, especially after the implementation of the structural adjustment programme, private partnership schemes between agro-industries and oil palm smallholders could be highly profitable for both stakeholders. Such partnerships can foster social cohesion and limit further encroachment of agro-industries into the primary forest, provided such partnership agreements are carefully planned and adequately implemented.

Key words: FONADER, Afriland First Bank, Partnership, Smallholders, Agro-industry, Oil palm

2.2 INTRODUCTION

The oil palm (*Elæis guineensis* Jacq.) is a perennial plant native to the humid tropics of West and Central Africa which grows between 10°North and 10°South latitude. In these regions it is very common to find oil palm growing spontaneously in the wild, in isolated stands or as natural oil palm groves.

The human populations living in the forest zone of Cameroon have always been using oilpalm products: the crude oil extracted from the mesocarp of the fruit, the kernel oil (sometimes called white oil) and the sap which ferments spontaneously to generate palm wine. However, palm oil (its main product) led to its worldwide success as far back as the first half of the 19th century. This was the result of an increased demand generated by the industrial revolution in Europe (notably to lubricate railway truck axles) and, to a lesser degree, for palm kernel oil as the margarine industry developed in Germany and the Netherlands (Jannot, 2003).

The development of the oil palm sector in Cameroon began with the harvesting of spontaneous oil palm groves and the incorporation of sprouted seedlings into farmlands inside agroforestry systems. The annexation of Cameroon by the Germans prompted the development of large-scale plantations by private German firms before the First World War (WWI). After the defeat of the Germans by the British and the French in 1916, the industrialization of these plantations began with the creation of Pamol plantations in 1928,

then the Cameroon Development Corporation (CDC) in 1947/48, before Independence and re-unification, respectively in 1960 and 1961. During this period, very little was done to develop the smallholders' oil palm sector. Although Pamol began with the development of village plantations for the local population in the 1960s and 1970s, CDC on its part did very little to develop oil palm plantations for the local population. After the creation of 'La Société Camerounaise de Palmeraies' (SOCAPALM) in 1968 under a Nucleus Estate Smallholder (NES) model, it is only in the late 1970s that the government of Cameroon - as part of its poverty reduction strategy-decided to develop oil palm smallholdings for the locals. A partnership between major agro-industries and oil palm smallholders was created with funding assistance from the World Bank and it was placed under the supervision of the'Fonds National du Développement Rural' (FONADER) (Ndjogui et al.,2014; Nkongho et al., 2014). According to Carrère (2010), about 35,000 ha of smallholdings were developed within 12 years during the FONADER-sponsored scheme.

Our research followed three main objectives: (i) to trace changes in the oil palm industry in the country; (ii) to describe its various stakeholders and (iii) to analyze the different partnership schemes that were put in place by institutions over time in order to develop the oil palm sector in Cameroon and some of the challenges they faced.

2.3 METHODOLOGY

The research relied on multiple sources of information. A thorough literature review was conducted through data mining from scientific publications, students' thesis and reports from various public services, NGOs and international institutions. Media reports were also analyzed on the internet. Oil palm companies also contributed to our sources by the kind opening of their archives and statistical information even if very little historical data were available from the archives of the companies.

Our literature review was complemented by three field surveys conducted in 2011, 2012 and 2013 in the Centre, Littoral and Southwest regions in which major oil palm development took place over the years. These regions harbor five agro-industrial oil palm companies (SOCAPALM, Pamol, Cameroon Development Corporation (CDC), Société des Palmeraies de la Ferme Suisse (SPFS), and SAFACAM) and more than three quarters of all oil palm smallholdings are located in these regions. Figure 1 shows the location of large oil palm companies in the Cameroon oil palm belt.

Our research focused on the various ways oil palm was cultivated locally before the development of monocultural oil palm plantations by agro-industries. It was aimed at analyzing the various partnership models which existed or are still existing between plantation companies and smallholders, the reasons for the collapse of these partnerships when it occurred and the emergence of the second generation of oil palm 'smallholders'. Lastly our survey intended to understand the current measures put in place by agro-industries to strengthen their bonds with oil palm smallholders and to study innovative strategies from the government of Camerooon for the development of the oil palm sector. A total of 155 respondents were interviewed through a purposive sampling method in the course of a survey which consisted of 3 field trips of about 3 weeks each. The distribution of the sample was as follows: 35 retired company officials (senior supervisors and managers), 35 company officials in active service (senior supervisors and managers) and 80 key palm oil producers (50 from the FONADER scheme and 30 from the so-called "*Projet Villagisation*") including 5 officials from the Ministry of Agriculture and Rural Development. In cases of doubt, the same questions were cross-checked with other resource persons in order to ensure their validity.

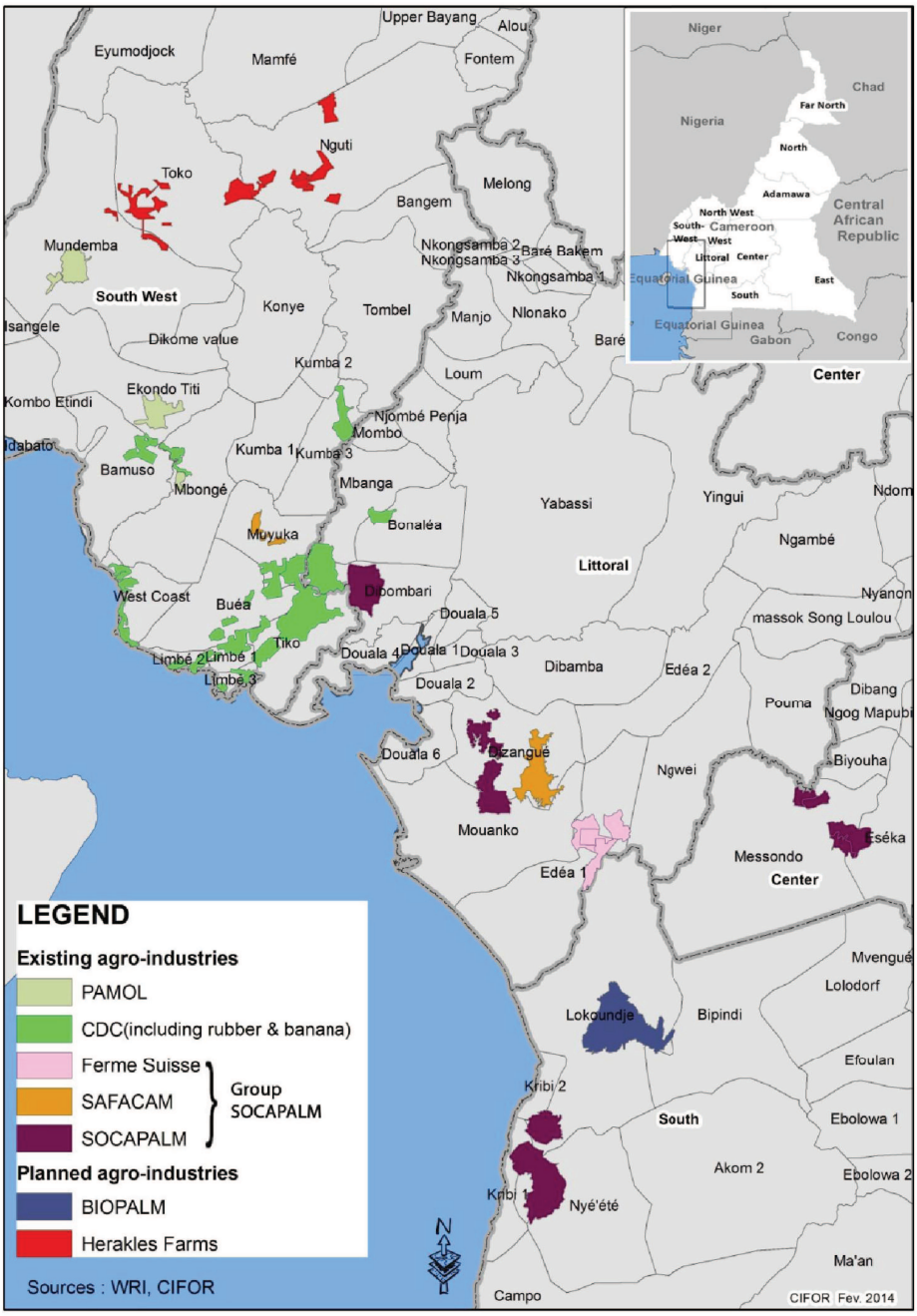

Figure 1: Location of agro-industrial oil palm companies in Cameroon

2.4 RESULTS

2.4.1 Pre-colonial times: gathering from natural groves

Before the arrival of the European colonizers, the local population inhabiting the forest zone of Cameroon harvested the native variety of oil palm mostly from natural oil palm groves for subsistence and trade. The natives also showed much interest in the cultivation of oil palm which grew spontaneously on farm land in association with other food and cash crops. It is only with the arrival of the German colonizer by the end of the 19th century that large scale cultivation of oil palm started.

The first Europeans to reside in the Victoria Division (present day Limbe) were missionaries of the Baptist Society led by Alfred Saker. He had earlier established a mission in Douala and Fernando Po (now Equatorial Guinea), but was forced to leave Fernando Po with two hundred loyal families when Spain declared its claim on the land in 1858. During this period little was done to develop the country commercially. Most of the commerce was controlled by British traders, but several German organizations also had their share of trade with the local population.

As early as 1877, Douala Chiefs requested Britain to establish a protectorate. The British procrastinated for seven years and by the time they finally made their move, it was too late. The native chiefs, tired of waiting for the British to make up their mind, contracted a treaty with Gustav Nachtigal, representing Germany, on July 14, 1884 (Bederman, 1968). Almost a year later, in 1885, the British recognized all German claims, except those involving Victoria. After negotiation for compensation for the Baptist Missions, the British abandoned all claims to Kamerun in 1886, and shortly thereafter, the Basel Mission took over the work of the Baptist. France recognized the German Protectorate in a treaty signed in December 1885.

2.4.2 The German Colonial Period: first large scale plantations

The Germans were faced with two major problems in the course of their trade with the indigenous population of Kamerun. Firstly, the coastal chiefs in Douala were opposed to allow the Germans to trade directly with the populations in the hinterland, since they were getting a lot of profit from their position as middlemen between the indigenous traders and the Germans. Secondly the major waterways on either side of the territory were controlled by the British and the French. The Germans then sent explorers around the Mount Cameroon to make treaties with local chiefs in order to improve trade. It quickly became apparent to the

Germans that the lower slopes of the mountain were quite suitable for commercial exploitation. In the Mount Cameroon area alone, the Germans alienated 400 square miles of the most fertile land (83,000 hectares belonging to the indigenous Bakweri). In fact, they took the land without financial compensation to any of the rightful owners. According to Courade (1984), the Bakweri were forced either to move into prescribed restricted native reserves or onto territory outside the alienated lands. Though much land was alienated from the Bakweri, not all the land was put into use by the private German plantations. Throughout the German colonial period, the most important crops grown on the plantations were cocoa, rubber, and oil palm. Minor crops were kola, tobacco and coffee and almost all were exported to Germany. In 1892 the Germans established the Botanical garden in Victoria. The purpose of this garden was to conduct experiments on different types of soils, at different elevations, and under variable moisture conditions. The Botanical garden distributed free seeds and cuttings to the local population and at the same time gave valuable information in the proper exploitation of the colony's resources.

2.4.3 The interwar period in the Cameroons: industrialization of palm oil production

Shortly after World War 1 began, the British and French forces invaded the German colony, and by December, 1914, the British were in control of Victoria Division. By February 1916, all Kamerun was in the hands of the British and French. A month later, in March 1916, an agreement dividing Kamerun between the two countries was signed in London. On July, 1922, the smaller British portion became a mandate of the League of Nations and was assigned to the United Kingdom to be administered along with Nigeria. The properties of the German citizens were confiscated and turned over to the 'Custodian of Enemy Property' to be administered for the duration of the war. In 1924, the properties in both the French and British sectors were put up for sale. In the French Cameroon, all the ex-German plantations were purchased by French, British and Cameroonian businessmen. This was the direct opposite of what happened in the British Cameroon as almost all the plantations were purchased by their former German owners. In addition to land, the sales included the railway system, rolling stock, bridges, wharfs, all dwellings and factories. Between 1925 and 1939, most of the trade between British Cameroon and Europe was with Germany. At the outbreak of World War II in 1939, the German property was expropriated again by the 'Custodian of Enemy Property' and with this act, the German activity in Cameroon came to an end.

It is important to note that before the interwar period (1914 to 1939), the first industrial plantation in Cameroon was initiated in 1907 under the German colonial rule, leading to the creation of the Edea oil palm plantation in 1909, which was later renamed "Société des Palmeraies de la Ferme Suisse (SPFS)". The Germans continued the development of industrial plantations on the fertile slopes and plains of Mount Fako until the beginning of World War I. By 1919, in the western part of the country occupied by the British, four of these plantations were bought by the Unilever group (these plantations include Bwinga, Bai, Lobe and Ndian) which in addition obtained a concession area of 10,000 ha of partly primary and secondary forest for the creation of "Pamol Plantations". In 1947, the Cameroon Development Corporation (CDC) was created following an amalgamation of former German plantations at the foot of Mount Fako. Meanwhile another former German plantation "La Plantation de Dizangué" was bought in 1959 by the group Rivaud. This plantation is known today as "Société Africaine Forestière et Agricole du Cameroun (SAFACAM)". The last agro-industry to be developed "La Société Camerounaise de Palmeraies (SOCAPALM)", was created in 1968 by the Government of Cameroon and privatized in 2000. SOCAPALM, SAFACAM and SPFS are today controlled by the French group Bolloré, while CDC and Pamol are the only remaining public companies (Carrère, 2010).

2.4.4 Pamol Plantations

The shareholders of Pamol were a group of British boys who attributed the initial letters of their names to the company (Paul-Andrew-Martin-Oliver-Lawrence= PAMOL). Pamol in Cameroon controlled four estates - Ndian, Lobe, Bai and Bwinga- three of which were established in the former Kumba Division and one in the former Victoria Division. Bai estate on its part was acquired by Bai Rubber and Cocoa estates in July 1910. War demands necessitated an increase in rubber cultivation and so cocoa was cut down in favour of rubber in 1928 and 1931. Ndian was a cocoa plantation acquired from the Germans in 1926 and was replanted in 1928/29 with oil palm. Lobe estate, originally a banana estate was acquired in the early 1930s by the African and Eastern Trading Corporation. By 1949/50, the Germans vested ownership of the area to Pamol Ltd whereby in 1955, 5000 acres of banana were in production. Bwinga, first a banana estate, was opened in 1931 and replanted in 1959 with rubber. Pamol Ltd became a direct subsidiary of Unilever Ltd after the company split with United Africa Company in 1956 which possessed plantations in Cameroon, Nigeria and Ghana, with headquarters at Calabar. According to Barbier et al. (1980), the fall in the market prices of banana and the emergence of the panama disease, and wind damage from tornado

storm forced Pamol to start focusing on the production of rubber and oil palm. As such in the late 1960s, the remaining plantations were completely replaced by rubber and oil palms. In 1967, following a Cameroonization policy by the State, this company was incorporated in "Plantations Pamol du Cameroun Limited" (PPCL) with registered office in Limbe and later on transferred to Lobe Estate. In a convention signed between Pamol (Cameroons) Limited and the newly created company Plantations Pamol du Cameroun Limited (PPCL), all P(C)L assets were transferred to the new company (*PAMOL unpublished report*).

The Pamol research department

A wide range of oil palm research started in 1948 by Unilever to produce improved planting material through breeding and to conduct research in the area of crop protection and agronomy in order to maximize yields and provide advisory services to the company and third parties locally and internationally. The main scientific justification for undertaking a program of plant breeding rather than relying on the importation of seeds bred elsewhere was the likelihood of interaction between genotype and environments. The Lobe program contains valuable germplasm, which includes the Lobe foundation stock (Ekona) supplemented by introduction from NIFOR, Ivory Coast, Republic of Benin, Malaysia, Indonesia (Deli), several centers in the Democratic Republic of Congo and the unique Bamenda (Cameroon) collection. This collection provides what is genetically one of the most varied and broadly based collection of breeding material in Africa or South-East Asia. The program is being continued and improved upon by the company. The seeds of Pamol Plantations have been on export to countries like Colombia, Congo Brazzaville, Liberia, Nigeria, Thailand, Sierra Leone and Ghana just to mention a few, and total sales amounted to one million seeds in 1986 and 1987. This flourishing export is attributed to the high reputation that Pamol seeds commanded around the world and Pamol's international connection through Unilever.

Upon recognition of the quality and competence of Pamol Research Centre, the Cameroon government in the early 2000s, through the Ministry of Agriculture and under the National Agricultural Extension and Research Program (NAERP) entered into an agreement for collaboration with Pamol. This agreement was for the production, supply of quality germinated seeds to oil palm farmers in Cameroon. Presently Pamol Research Department maintains a collection of 332 Duras and 8 Pisifera seed parent palms and has a potential of producing about 2,000,000 germinated oil palm seeds per year.

Source: C. Etta (pers. comm.); PAMOL unpublished report

2.4.4.1 How Pamol managed to escape liquidation

By 1982, there was severe drought that greatly affected the production of palm oil, coupled with low purchase price for CPO and high taxes at the level of the government. By 1985/86, the company had to fell and replant areas made of old palms and so pleaded with the government to exempt them from taxes for four years. When the Cameroon government

refused, the Unilever group decided to put Pamol on voluntary liquidation in October 1987 and so appointed a liquidator in the person of Mr. C.G. Mure (Konings, 1989 ; 1997). But before this, C.G. Mure was an auditor who had been auditing Pamol for some years. As liquidator, he proceeded to sell the stock of oil left by Unilever and paid the money to Unilever account in Manchester upon instructions from the then board of Directors of Pamol and thus making Pamol workers to become shareholders in the company (1.8% of the total share). A strike action masterminded by top company managers which lasted for about 3 months led to the replacement of C.G. Mure with M.B. Obenofunde in 1992 as the new liquidator for Pamol. Mr. Obenofunde then re-organised the Pamol management and late Dr Timti became the Management Coordinator, while Mr Kimbeng became the technical adviser. Mr Melle became the finance and administrative manager. After failure to find a buyer for the company, partly due to resistance from the native Oroko tribe, the government decided to appoint a new General Manager for the company after the creditors decided to buy the company by becoming shareholders through a debt equity swap operation, with a change of name from Plantation Pamol du Cameroon to Pamol Plantations Ltd in 1996 (*Nemoh A.B. pers. comm.*).

2.4.4.2 Pamol Plantations and the development of oil palm smallholdings

Pamol plantations actually began with the development of smallholder plantations in the early 1970s. For example, six villages with customary rights to land leased to Pamol Plantation in Lobe actually benefitted from the creation of 10 hectares of demonstration farms in each of these villages. These villages included Ngolo-Metoko, Bogongo 1, Lipenja, Kumbe Balondo, Lobe town and Ekondo-Titi. After developing the plantations for the villages, the farm was entrusted to the villagers through the village council that was headed by the chief. While the villagers took care of the interline slashing, the company on its part was in charge of the harvesting and pruning of the palms. Four reasons prompted Pamol Plantations to open oil palm plantations for these villages:

- Corporate social responsibility;
- The company's plantations could not meet up with the capacity of the mill and as such the company needed extra supply of fresh fruit bunches;
- The company wanted to discourage the villagers from stealing fruits from the company's oil palm plantations;

- The company also realized that it was cost effective to open smallholder plantations, instead of embarking on new development of its own plantation due to huge costs. This was clearly seen when the company wanted to carry out an extension of the Ngolo-Metoko division (*Nkwain pers. comm.*).

Pamol went further to encourage smallholders to open plantations on their own with the hope that they would supply their produce to the company. This encouragement was done through the supply of quality planting material either at subsidized rates, or on certain occasions free of charge. The company went further in the 1980s and early 1990s to advice the farmers to group themselves into cooperatives in order to facilitate the running of the smallholders department. With respect to this advice a number of cooperatives sprouted which included: Campers, Mushcoops, Secoops, Ekoscoop, Manja Youths CIG, Mebeek CIG, Providence CIG, Catholic Mission Ikassa, etc. The advantages that accrued for being a member of these cooperatives was the possibility of buying seeds at discount rates from the company, instead of 200 frs (0.3€), the company sold to the cooperative at 100 frs (0.15€), access to credit from the bank, better negotiation with Pamol management on issues of common interest for the farmers. But these cooperatives did not last for long due to corrupt practices, power tussle amongst its members, and embezzlement of funds (*Metuge, pers. comm.*).

2.4.5 The Cameroon Development Corporation (CDC)

After the end of the Second World War in 1945, the Bakweri Land Committee wrote a petition to the British crown to allow the Bakweri people the right to reclaim all the land which the Germans took from them in the 1880s and 1890s, but this petition was turned down, leading to the creation of the Cameroon Development Corporation in December 1946, which finally went operational in January 1947.

The Governor of Nigeria paid a total of 425 million FCFA (647,909€) in 1947 for the ex-German plantation lands, and he quickly leased them to the CDC, which was created with a wide range of duties and powers assigned to it. In addition to cultivating crops, developing, and managing the estates, it also had the responsibility of constructing and maintaining roads, railways, waterways, quays and wharfs. One of its prime obligations was to provide for the general social welfare of its employees. This included housing, medical services and educational and recreational facilities. After all its obligations were fulfilled, it was to pay direct taxes to the Government of Nigeria and all profits were to be used for the benefit of the people of the Cameroons (Berderman, 1968). Arrangements were made between CDC

management and the Custodian of Enemy Property to continue the day-to-day management of the company until June 1947 when CDC accepted full responsibility for its actions. In July 1947, the Corporation had to begin with the rehabilitation of 200,000 acres of plantation land, of which over 67,000 acres had been under cultivation. CDC was created without any working capital, and as such the Corporation decided to take a small loan from the Nigerian government of about 50 million FCFA (76,225 €) for a short duration of 3 months, with an interest rate of 3.5 percent (Oben and Fanso, 2012). With this limitation in working capital, CDC resorted mostly to the cultivation of bananas, since the immature period for the crop was much reduced as opposed to oil palm and rubber which took 4 and 7 years respectively to become mature. But the Corporation also cultivated smaller portions of oil palm and rubber in part of its estate, despite the increase in production costs for these two commodities. The purpose of continuing to cultivate smaller portions of its land with oil palm and rubber was basically to supply palm oil and rubber to Britain and other European countries due to acute shortage (Bederman, 1968). Some of the problems faced by CDC in its early stage included:

- The lack of statistical and other vital information concerning the operations of the estates in the past;
- A complete absence of detailed survey information with respect to topography and soils;
- Machinery and equipment were old and much of it was beyond repair, and spare parts were impossible to obtain from war-torn Germany;
- Since it was obvious that modern machinery was needed, the Corporation had to wait for its turn for such supplies, since it could not demand too much from the British Government.

Between 1947 and 1959, the Corporation, through actions of the Board of Directors, contracted a series of loans from two sources- the Nigerian Government and Barclays Bank, D.C.O. The regulations governing appointment to the Board did not change until 1960, when the Colonial Development Corporation (now the Commonwealth Development Corporation, or Comdev) lent CDC 500 million FCFA (762,246€) and at the same time partly assumed active management of the Corporation (Oben and Fanso, 2012). But this agreement did not last since French Cameroon got independence in 1960 to become the Republic of Cameroon. In February 1961, Southern British Cameroon voted in a United Nations controlled plebiscite to become part of Cameroon, whereas Northern British Cameroon voted to remain with Nigeria. On 1st October 1961, the Federal Republic of Cameroon came into being with

Southern British Cameroon becoming West Cameroon and the former French section became East Cameroon.

2.4.5.1 CDC and the cultivation of oil palm

As early as the mid-1950s, it became quite apparent that bananas were on the decline, and the Corporation had to diversify its crops and this would entail a very costly development program. By the 1960s the corporation was ready to discontinue banana production due to many factors:

- World market problems and the loss of Commonwealth preference on exports to the United Kingdom following the re-unification of the former Southern Cameroon with the former French Cameroun in 1961;
- Foreign competition with other producing countries;
- Unsuitable climatic conditions;
- Disastrous plant diseases like the Panama disease (*Fusarium oxysporum* f. cubense), Sigatoka leaf spot disease (*Mycosphaerella musicola*), and cigar end disease (*Trachysphaera or Verticillium*).

The estates taken over by CDC in 1947 included many palm plantations, but they were scattered, and in no case did the Germans have a single block of trees large enough to be considered an economic unit. The type or variety which had been planted varied considerably, and often young palms were indiscriminately mixed with old ones. In addition, during World War II, machinery and transport facilities were allowed to deteriorate, so that in 1947, the operation of the oil palm plantations was totally uneconomic *(CDC, unpublished report)*. As there was a post-war shortage of palm oil in England and much of Europe, the Corporation decided to continue producing palm products for the purpose of exporting these to Europe. The Corporation began to operate four oil palm estates namely Moliwe (2,361 ha), Mpundu (1,563 ha), Idenau (1,882 ha) and Bota (2,121 ha). By December 1966, a total of 8,093 ha of Corporation land was planted with oil palm and over half the total surface area had been planted since 1955. CDC also realized as early as 1948 the need for scientific work in oil palm breeding in order to improve the yield of the crop. Since this period, it was the task of the palm breeding unit to supply all the estates with the best possible planting material (*CDC, unpublished report*).

It is important to note that when Cameroon was in the hands of the Germans, they had identified an exceptionally thin-shelled palm fruit with a high oil content as early as 1902. This "lisombe" palm, later to become known as the Tenera type, was found only rarely in the wild and failed to breed true. The Belgians then began in 1922 to investigate the German discovery with the creation of an experimental trial of Tenera palms at the Yangambi research station in Belgian Congo (today's Democratic Republic of Congo), and in the 1930s these palms were subjected to three-year testing program. Tenera seed also found its way to Sumatra and Malaysia in the 1920s, although there, as in Central Africa, it failed to breed true. The Tenera palm which is actually a hybrid of the Dura and Pisifera varieties, when crossed would produce 50 percent Tenera, 25 percent Dura and 25 percent Pisifera. Beirnaert's discovery was published at the height of World War II, and it was not until after 1945 that it could be turned into practical use with the establishment of large-scale and long term Tenera breeding programs (Kiple, 2000).

At the level of CDC, in 1948 the palm breeding unit located Pisifera varieties of unknown parentage at Idenau, and crossed its pollen with an improved Deli-Dura variety which had been imported from the Far-East in the early 1930s by the Germans and planted at Ngeme, near Bota. The resulting seedlings were planted in 1950 at Idenau. Idenau estate was completely replanted in the next few years and the plantation was also extended. The variety planted throughout the estate was Tenera, and as a result, Idenau Estate became one of the first commercial plantations in the world to be planted exclusively with this variety (Bederman, 1968). Also the oil to bunch ratio obtained at the Idenau mill was greater than that obtain on any other CDC plantation. In the later years, Pisifera pollen was imported in sealed tubes from the French oil palm breeding institute (I.R.H.O.), with its main research station in Ivory Coast. The seeds that were later planted came from a cross between Deli-Dura palms in the Corporation's genetic blocks and imported Pisifera pollen. The Palm breeding unit with headquarters in Bota, was later moved to Ekona in 1954 because of better climatic conditions (less rain and humidity) for laboratory work. During this period starting with the creation of CDC, the Corporation was making use of three mills. These included the Idenau and Bota mills which utilized steam engines run by burning empty fruit bunches, pericarp fibre and broken shells, while the mill at Mpundu was run with electricity. Palm oil for export came from the Idenau and Bota mills, while oil for local consumption came mainly from Mpundu. This arrangement saved the Corporation transportation costs of getting Mpundu oil to the coast.

2.4.5.2 CDC and its relationship with smallholders

After independence and re-unification in 1960/61, CDC invited experts from the Commonwealth Development Corporation headed by R.J.M. Swynnerton in 1964 to draft a long term development plan for the corporation. In its report, the mission advised the corporation to set up a variety of rubber, oil palm and tea smallholder schemes and to extend its role in smallholder development from exchange to production: the regular supply of inputs, credit, and technical advice as well as strict supervision process. It also recommended the installation of a Smallholder Development Authority by the Federal State of West Cameroon, which would be responsible for the planning and implementation of smallholder schemes in the territory, which never came into fruition. Though the Swynnerton proposal was not implemented by either CDC or the federal government, CDC became interestingly involved in smallholder development (Konings, 1993). After independence and re-unification, concomitant with the fall in production of banana from CDC, most banana farmers were grouped into cooperatives, notably the Bakweri Cooperative Union of Farmers (BCUF). These farmers decided to use their accumulated capital to diversify into oil palm and rubber production. It is within this backdrop that they resorted to CDC to aid in the purchase, transportation and marketing of their produce after grouping themselves into a cooperative. The West Cameroon Department of Agriculture and Cooperative was very instrumental in the bargain between the farmers and the CDC. These farmers were also composed of the peasant and middle class farmers with disparity in respect to surface areas of their plantations. The major limitation they suffered even after coming into a consensus with the CDC was the fact that most of their plantations were scattered all over the South West Region, thus making it difficult for effective management by CDC, and also the fact that they complained about the low purchase price by CDC for their produce (Konings, 1993).

CDC is today the biggest agro-industrial complex in the country and the second employer after the Cameroon Government (Bakoumé et al., 2002). Since 2002, with the privatization of its tea estates (Tole, Ndu and Djuttitsa), CDC is left with the oil palm, rubber, and banana sector.

By the 1960s, 70% of the national palm oil production came from natural oil palm groves, while the remainder came from CDC and Pamol (Carrere, 2010). According to Jannot (2003), by 1960 palm oil production was estimated at 1,098,000 tons for Africa, 232,000 tons for Asia

and 20,000 tons for Latin America, while export was estimated at 353,000 tons for Africa and 206,000 tons for Asia.

2.4.6 Independence and Re-unification: public aid to agro-industries and NES development schemes

The 1960s were marked in Africa by decolonization, almost all the African countries gained independence. These independent countries opted for the diversification of their agricultural income and local transformation of their products. Countries of the oil palm belt promoted the development of oil palm amongst other crops (cocoa, coffee, rubber) (Bakoumé, 2006). To this effect, the Government of Cameroon was not an exception after the Independence of French Cameroon in 1960 and unification with the British Cameroon in 1961. The new independent Cameroonian government decided to adopt the "nucleus estate and smallholders" (NES) model in its oil palm development plan. This involved a palm oil mill surrounded by an estate, itself surrounded by plantations owned by smallholders. The Government decided as of 1963 to develop the cultivation of oil palm, and created SOCAPALM in 1968 by Presidential decree No. 68/DF/45 on 23 November 1968 (Andela, 2006).

Until the late 1970s, a majority of the population of the southern forest zones of Cameroon relied partly on natural oil palm groves for subsistence and trade. Apart from palm oil, the population also relied on the cultivation of other cash crops like cocoa and coffee, food crops, the harvesting of non-timber forest products (NTFPs), as well as timber and bush meat for subsistence and trade.

Between 1971 and 1981, close to two thirds of public funds earmarked for agricultural development were allocated to the agro-industrial and smallholder sectors, through the development of nucleus estates and smallholders (NES) schemes. As a result of this developmental orientation, over 90% of the national palm oil production fell in the hands of the five agro-industrial companies: CDC, Pamol, SOCAPALM, SAFACAM, Ferme Suisse (Carrere, 2010).

The first oil palm development plan was initiated by the Government of Cameroon with financial support from the World Bank in 1977 and 1978. It was during the first oil palm development plan that what is usually termed today as the first generation of oil palm smallholders came into existence (1977/78-1990/91), placed under the authority of the '*Fonds National du Développement Rural*' (FONADER) with financial aid from the World Bank to the Cameroon Government.

Three agro-industrial oil palm companies benefited from this project: CDC, SOCAPALM and Pamol, selected for their technical expertise (Courade, 1984). Any smallholder who wanted to join the scheme was requested to sign a contract with one of the aforementioned agro-industrial companies. This contract stipulated the conditions for participation and the mutual obligations of the contracting parties. The most important conditions for participation were the following:

- Candidates had to be of Cameroonian nationality and derive at least 75% of their income from farming;
- They had to be between 25 and 40 years old and physically fit to establish a farm.

However, older persons who had the labour force of younger relatives at their disposal could also qualify. Moreover interested persons had to own land that met the conditions of the contract: it had to be within a radius of 30 km from the company's mill, located less than 500 m from a road or track passable for the company's vehicles, suitable for oil palm cultivation and covered by a land use right for at least twenty-four years. Finally, they had to have the company's approval for participating in the scheme (Konings, 1993).

The obligations of the two contracting parties were as follows: the participant had to scrupulously execute all the instructions given by the company in the labour process, attend all the meetings convened by the company for training and farm management practice, sell all their produce to the company, settle ("scrupulously") all their debts with the company. The company had to provide the participant with the necessary inputs, technical advice and supervision. These services were to be rendered on credit and had to be repaid in increasing installments after the crop had entered into production with an annual interest rate of 9%, plus a 2% deduction from the amounts of these purchases for management fees. The credit to be paid by the farmers included the cost of oil palm development and maintenance for 5 years. The repayment of the credit plus interest was supposed to begin from the 6^{th} to the 12^{th} year, giving a period of 7 years in increasing installment as shown in table 1 below. From table 1, deduction of credit is based on the age of the palm, since FFB production increases with age until about 15 years or more (*FONADER contract, unpublished*).

Table 1 : Yearly installment of credit plus interest

Year	Installment of credit plus interest (in %)
6	5.5
7	10.0
8	14.0
9	16.0
10	17.0
11	18.0
12	19.5

Source: FONADER contracts

Repayment was to be deducted from the sales to the company. In addition, the company's management had to transport the participants' output for a fixed price to its factories for processing. Lastly, it was obliged to pay the producers monthly for the crop delivered. Participants were expected to have between 2 and 5 ha of plantations with selected planting material depending on output.

Failure to comply with the terms of contract was the automatic seizure of the land by the company and the contract in question was for a period of 27 years from the year of first land clearing, and following the repayment of all debts, the participants were to receive a land certificate registered in the survey department. During the maturing period of the crop, the producers were to receive a non-refundable cash grant of 56,900FCFA (86.7€) serving as a kind of remuneration for their labour input. The project went further to foster rural development through regular road maintenance and the building of bridges in areas where these smallholder oil palm plantations were located and this was part of the companies' obligation to government (Konings, 1986; Bakoumé et al., 2002; Rafflegeau, 2008).

Before the liquidation of FONADER in 1990 the smallholder department was operating as a separate entity in each of the agro-industries, in that its management was separated from that of the nucleus estate. The smallholder department in each agro-industrial complex was in control of its own personnel, material and transport facilities. This greatly facilitated the work with the farmers in the sense that the evacuation of fresh bunches from the farms to the nucleus mill was done on time. Coupled with material and technical support given to the farmers, this greatly kept the relationship between the two parties alive.

2.4.6.1 The collapse of FONADER

Internal and external factors have been attributed to be responsible for the collapse of FONADER. Internally the FONADER management was over-centralized at the national level

with the absence of representatives at the regional and divisional headquarters of the country. This was a major cause of delay in disbursing funds earmarked for on-going projects. Other studies even hold that the government was using funds from FONADER in other non-productive economic sectors. With respect to the oil palm sector, it is even reported that some agro-industries put more importance on their own plantations than smallholder plantations. Foko (1994) reports that many documents had to be processed to benefit from FONADER funds, and he further explains that this was probably another limitation for the rural poor, some of whom never went to school. Elong (2003) stresses that about 70% of the total smallholder plantations developed in lower Mungo by 1989 fell in the hands of urban elites.

The external causes which led to the collapse of FONADER include; the withdrawal of the World Bank which was considered as a major source of funding for FONADER, the fall in export prices for agricultural products like coffee, cocoa, cotton, banana, etc. in the world market, and the withdrawal of the State on the productive and most especially the rural sector due the economic crisis of the late 1980s.

2.4.7 Structural adjustment Period: emergence of elite palm oil producers

After the liquidation of FONADER in 1990, the reduction of a great number of civil servants in the Cameroon public service due to the structural adjustment program, the economic crisis, the devaluation of the CFA Franc, a fall in the international market for cocoa and coffee (two important cash crops which most farmers relied on for their income) and an increase in the domestic price for palm oil (Ndigui et al., 2006), the entering of another generation of oil palm smallholders was recorded. The structural adjustment program imposed by the International Monetary Fund on the government of Cameroon in the late 1980s precipitated the privatization of 15 public enterprises in the transportation and agro-industrial sector in July 1994 (Konings, 1996). This led to the liberalization of the palm oil sector. As a consequence, the number of artisanal palm oil mills scattered all over the oil palm production basins of Cameroon increased sharply (Hirsch, 2000).

This second generation of oil palm smallholders were not only peasant farmers but a great majority of them were either internal or external elites. Internal elite includes former workers with the public and private sectors on retirement and now resident in their village of origin, together with notables in the village like the chiefs and quarter heads. External elites include the same category of persons, but who do not reside in the village. Some of these elites hold top positions in the public and private sectors of the State. Most of them single-handedly

sponsored their oil palm plantations, with very little or no external support from the government and some of them opened large estates of 50 ha and above as shown on figure 2 below. The figure below shows the surface areas of oil palm plantations owned by elite palm oil producers in four palm oil production basins in the forest zone of Cameroon sampled in 2011.

Elites play a very important role in the agricultural development of the country, especially in an era when the government is doing very little to develop the agricultural sector, especially after the country was hit by the economic crisis of the late 1980s. These elites were able to secure personal funding to invest in the creation of oil palm plantations in the southern part of the country. The early 1990s marked a turning point in the agricultural sector in Cameroon as most of these elites got involved in oil palm development. A majority of this oil palm development was done in their regions of origin where they could easily purchase the land at relatively low rates.

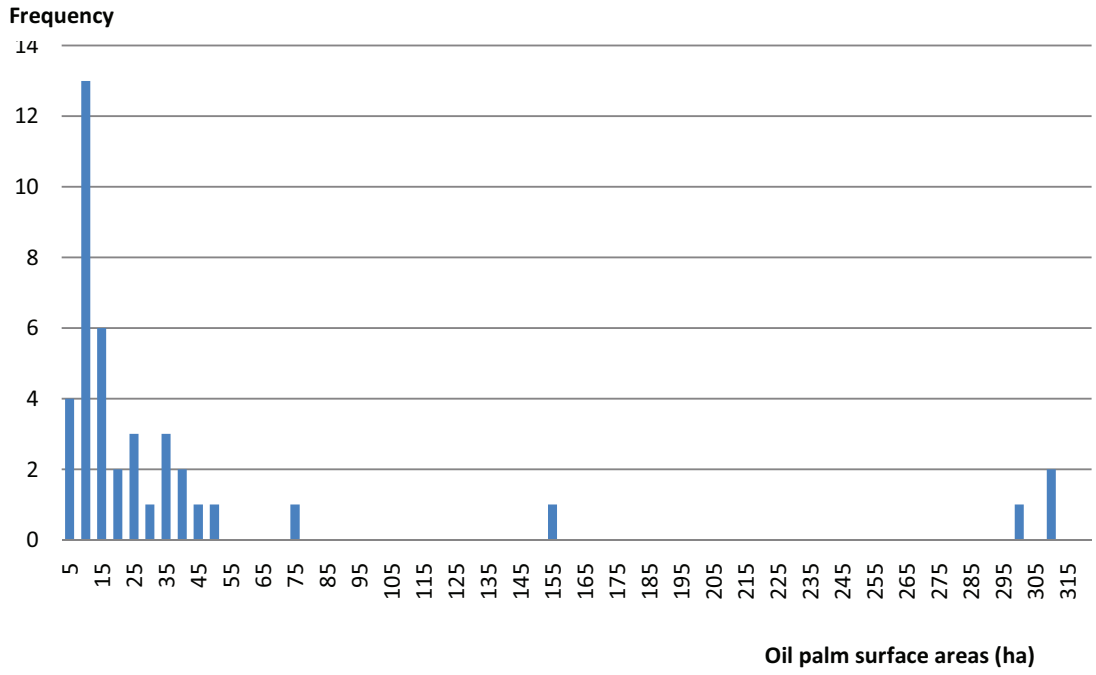

Figure 2: Distribution of surface areas for Elite planters

After the liquidation of FONADER the industrial mills resorted to merge the management of the smallholder department with that of the nucleus estate in order to reduce production costs. Some of the top personnel in these companies at the management level saw this fusion of the smallholder department and nucleus estate as a unique opportunity for them to divert

resources that were destined to the smallholders for their personal use. Such diversions were made possible by the poor tracking records of the companies. Priority was also given to the evacuation of estate crops, payment of salaries of company workers, some smallholders also complained that the purchase price for a kilogram of fresh fruit at 25 to 40 FCFA (0.04 to 0.06 €) was small and needed to be augmented. The merging of the smallholder department with that of estate management also made most smallholders to believe that the smallholder department had collapsed and as such became reticent to supply their fresh fruit bunches in order to reimburse their loans. There were regular confrontations between company officials and some oil palm smallholders as a way to cause these smallholders to comply with the payment of their loans (*Njanjo, pers. comm.*). According to Foko (1994), local populations viewed credit support through government banks like FONADER as a gift, and this made them reticent to reimburse the loans.

Faced with some of these challenges, most of the new generation oil palm smallholders started searching for a means of processing their fresh fruit bunches and this led to an upsurge in the number of artisanal mills both within the periphery of the agro-industries and in far-off areas. This period also saw an increase in the level of fruit theft in the major oil palm agro-industries by the local population, a situation that is still very rampant today (PACA, 2009; Nkongho et al., 2015). It is important to note that the relationship existing at present between oil palm smallholders of both generations and major agro-industrial companies is a matter of convenience. This implies that most smallholders can only supply their fresh bunches to the nucleus mill either during peak production period when they are aware that the capacity of their artisanal mills or commercial artisanal mills cannot accommodate the supply of fresh bunches from their plantations or when their artisanal mills break down. It is rare to find any smallholder today who delivers 100% of his fresh bunches to any of these companies.

Between 1961- 1980 the surface area for agro-industries stood at 41,201 ha, between 1981-2000 the agro-industries had an additional surface area of 10,629 ha, while the smallholders using quality planting material recorded a surface area of 43,000 ha (Jannot, 2003). In another study by Cheyns and Rafflegeau (2005), smallholders planted 12,000 ha of selected oil palm material between 1977-1991. According to Bakoumé et al. (2002), about 29,000 ha of oil palm smallholdings were planted between 1996-2001 with an annual average of 4,800 ha. The actual surface area for smallholders was therefore 43,300 ha of selected palms (i.e. 14,400 ha FONADER sponsored smallholders and 28,900 ha through sales of chitted seeds from La Dibamba, Pamol and sale of seedlings by agro-industries). To date, no reliable data are

available concerning the surface area occupied with natural oil palm groves as well as its production.

2.4.8 Recent public commitment to develop the sector: insufficient aid to smallholders

One of the most recent initiatives adopted to promote plantations was the Ministry of Agriculture's Oil Palm Project of 2001 (Carrère, 2010). Its objectives included the promotion of a subcontracting system favorable to private agro-industries. This project was supposed to represent the "new era" of oil palm expansion in the country. It set a target of increasing the area under oil palm by at least 5,000 hectares a year, in order to produce 250,000 tons of palm oil by 2010. This program followed in the footsteps of the Heavily Indebted Poor Countries Initiative launched in 1996 by the G7 and administered by the international financial institutions. The development strategy is based on:

- the development of the agro-industrial sector through privatization and the establishment of new contractual relations with village plantations;
- the development of the village plantation sector (increased productivity);
- the formulation of better research framework, through the efforts of the Cameroon-based Institute of Agricultural Research for Development (IRAD) and the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD) (Carrère, 2010).

The government through the Ministry of Agriculture and Rural Development also signed a convention with UNEXPALM (Union des exploitants du palmier à huile du Cameroun), with funds from the World Bank. Between 2004 and 2009 UNEXPALM was supposed to increase smallholding productivity via technical improvement, 7,500-7,600 ha of selected seedlings were supposed to be supplied to smallholders, with each of them benefitting from a hectare of selected seedlings. The second phase of the convention spans from 2012 till 2015 with infrastructural improvement and the development of partnership with enterprises (Emmanuel Ngom, pers. com.).

The Rumpi area participatory development project that spans from 2005-2012, under the "umbrella"of the Ministry of Agriculture and Rural Development with funds from the African Development Bank, saw the distribution of oil palm seeds on a minor scale to farmers of the Southwest region. These seeds were supposed to be high quality seeds produced by Pamol research department. These farmers were supposed to develop their nurseries themselves, with

technical support from field agents working with the Rumpi area participatory development project based in the Southwest region. Unfortunately, the quantity of seeds distributed to farmers in the six divisions that make up the Southwest was quite limited and each farmer could not even plant a hectare of land with oil palm. In a meeting held between the Rumpi project officials and some indigenous NGOs that were contracted to evaluate the success in the distribution of planting materials to farmers, questions were posed to the Rumpi project officials, as to why the quantity of quality seeds supplied to farmers was so limited? The response from one of the project′s officials (the Director for agronomic component of the project) was "We acknowledge the fact that the quantity of seeds supplied to farmers is limited, but the objective of the project is to teach the farmers to see the difference between certified seeds and uncertified seeds, especially when the palms would have entered into production." Apart from quality oil palm seeds, farmers also benefitted from cassava cuttings, micro-propagated plantains, varieties of rice for planting, as well as processing machines for rice, oil palm and cassava, etc.

2.4.8.1 The REPARAC project

This project started in 2004, under the Ministry for Scientific Research and Innovation and the French Ministry of Foreign Affairs. The objective of this project was, amongst others, to provide scientific, technical and institutional advice and to develop proposals for improvement of production systems for perennial crops including oil palm in the South Region of Cameroon. The expected results of this project were:

- Reinforcement of the capacity of agricultural research in response to the new challenges of rural development.
- The establishment of contractual relations between the scientific partners and those of civil societies in the implementation of agricultural research.
- Provision of technical and organizational innovations adapted to the needs of the farmers and other beneficiaries (Ndoum, 2009)**.**

But according to Ndigui (pers. com.), the oil palm component of this project lasted barely eighteen months.

2.4.9 Projet *villagisation* in SOCAPALM Eseka

SOCAPALM was developed in 1968 as a way of stepping up the production of palm oil and to generate income and employment opportunities for the local population. By 1978, the government also initiated a smallholder scheme and SOCAPALM was selected for the development of village plantations. The project was well accepted in the surrounding villages. With the collapsing of the scheme in the early nineties due to the FONADER bankruptcy, the smallholders were left alone. SOCAPALM was a publicly owned company from its creation until 2000 when the Government decided to privatize the company. Immediately after SOCAPALM was privatized, it faced stiff resistance from the local population who either wanted their land back or asked for massive compensations from the company's owners. Local populations found that when their land was seized by the Government in the late 1960s for the development of SOCAPALM, no reasonable compensation was given to the villages who had customary rights to the land. The case of SOCAPALM Eseka was no exception and this prompted the company to start looking for ways of working together with the local population. As a result, the *villagisation* project was designed to begin at Eseka and then to spread to the other SOCAPALM estates in Dibombari, Mbongo, Mbambou and Kienke.

The *villagisation* project at SOCAPALM Eseka started in 2007. Upon the privatization of SOCAPALM, 6,485 ha was the total concession area of SOCAPALM Eseka. Within this area, 2,601 ha were made up of very old palms planted between 1970 and 1973. Such palms should have been replanted because they were already older than their normal economic life span and the remaining area of the concession was supposed to undergo extension. SOCAPALM faced stiff resistance from the local population of Eseka to carry out the replanting of the 2,601 ha piece of land made up of old palms. According to the local population, it is the palms that were privatized by the Government to the company but not the land. Thus they did not see any reason why the company had to embark on a replanting scheme. In short, the native people never liked the idea of privatization and considered that the government should have given the land back to them.

There was also a high level of theft by the local population who frequently encroached into the plantation to steal fresh fruit bunches. This situation - coupled with the old age of palms- made the cost of production very high for the company, thus it was difficult for SOCAPALM to break even. This led to a series of layoffs of some company workers at SOCAPALM Eseka and management at the general directorate thought it was time to come into a consensus with the local population by starting the *villagisation* project.

2.4.9.1 Stakeholders of the project

The project is 95% funded by Afriland First Bank for a 1,423,000,000 FCFA (2,169,353 €) total budget. Each individual who was eligible to benefit from a plot was supposed to pay 5% of the requested amount depending on the plot area and this amount was paid directly in the account of SOCAPALM. SOCAPALM and the German Development Bank respectively paid a 20% and 80% deposit on a separate account dedicated to Afriland First Bank in case the planters were unable to complete the re-imbursement of their credit within 8 years. The planters were requested to pay back their credit through the supply to SOCAPALM of fresh fruit bunches harvested from their plots. As a result, a different agreement was signed between three different consortia, namely (Afriland First Bank, Mitfund, and Grower), then (SOCAPALM, Mitfund, Grower) then (SOCAPALM, Grower). The contract signed by each of the different stakeholders consortium clearly described the responsibilities of each institution involved in the scheme.

Indeed, Afriland First Bank was responsible for the financing of 95% of the cost of the plots leased by SOCAPALM to the local population for a period of 25 years. SOCAPALM was requested to provide technical expertise to selected growers and in return to buy all the fresh fruit bunches harvested from their plots. SOCAPALM was also asked to bear the cost of maintaining the roads of the plantation and the cost of transportation of FFB from the farm to their mill. The growers on their part had to bear 5% of the cost of land and to pay back the entirety of their loan with an 8% interest for a period of 8 years. Mitfund is the institution created by Afriland First Bank to ensure that farmers effectively paid their loan. Mitfund is in charge of the monitoring and assessment on the progress of reimbursement of the loan by the growers; MC2 is a micro finance institution whose main responsibility was to pay the net income of the growers after all the deductions has been done.

To become a contractor, the following documents were required: *registre de commerce* (official registration), *carte de contribuable* (tax payer registration), patent rights and CNPS (National Social Insurance Fund) contribution for workers. Photocopies of these documents with an application form are deposited at the company. Candidates also need to hire skilled workers for field operations. According to the agreement, the farmer was supposed to undertake the day to day management of his plot and this could be done through one of the following actors: the grower and his family; the hiring of a temporary or permanent work force or the cooperatives. In case of failure, SOCAPALM could step-in to manage the plot for the grower. In usual cases, SOCAPALM was there to provide the necessary technical

expertise while in the case of full overtaking; SOCAPALM will oversee all operations on the plot, including the recruitment and payment of labour and the work scheduling and execution. No particular criteria were used to partition plots to those who met all the requirements. As noted by most people, one of the greatest hindrance which prevented people to buy plots was the 5% down-payment needed. Under such a policy, people who were not members of the villages with ancestral rights to the concession area but were rich enough to pay for these 5% were able to buy plots. Thus discrepancies in plot allocation occurred in many ways. The plots were not equally distributed as those who earned more were able to acquire more plots. It was also possible for members whose villages did not fall into the concession area to get plots. According to the Director of SOCAPALM Eseka, when the project started, priority was given to people from whom SOCAPALM was using their ancestral land. Although when SOCAPALM managers realized that some of these persons were not interested to join the project, they had to accept people of the same ethnic group (Bassa) but without any ancestral claims to the land.

2.4.9.2 Discrepancies in plot allocation

Several farmers claimed that the sensitization phase before the start of the project was not properly implemented. They argued that information about the implementation of the scheme was in the hands of a group of persons only, mostly the internal and external elites of the villages. More, information was not well circulated through the organization of village meetings gathering all stakeholders including Afriland First Bank, SOCAPALM, the divisional officers of the area, local chiefs, internal and external elites and local populations of the villages who had customary rights to the land used by SOCAPALM. Farmers further stressed the fact that because of these failures there was a lot of discrepancies in the attribution of plots to the local population. It was stipulated in the original agreement that 25% of the plots had to go to the elites while 75% of the plots were supposed to be the property of the local population (those who strictly rely on agriculture for their subsistence). In reality the exact contrary happened as internal and external elites grabbed the majority of the plots. Some plots were even attributed to persons whose villages did not have customary rights in the concession area, however still of Bassa'a extraction, except two non-natives from the Northwest region. Most of the elites who owned plots in the scheme were 'absentee landlords' who can hardly locate their plots in the field. Another group of people (locals/farmers) claimed that the sensitization phase of the project was well carried out and

that detailed information on the implementation of the project was circulated, but that some local people were reluctant to be part of the project.

Some of the reasons for such reluctance were:

- Villagers considered that they had customary rights to the land and thus did not see why the company would want to rent them a land that is actually their property.
- Others didn't see any interest in acquiring old palm stands which were no longer fully yielding. Indeed, most of the palms were already above 34 years of age, thus far above 25 years which is considered as the standard economic life of a plantation.
- The 5% compulsory fee as the final criteria for eligibility to own a plot was also a major obstacle, which helped elites to grab more plots than poor farmers.
- It was even heard through the grapevine that after the payment of the 5% initial fee, the company might close down its activities in Eseka.

2.4.9.3 SOCAPALM fully controls plot management

When the project started in 2007, SOCAPALM was in charge by contract to provide technical assistance to the cooperative managing the plots for the growers. The cooperative was responsible to undertake the day-to-day management of the plots. This could be done through the recruitment of labour either through the use of temporary labour or the recruitment of contractors or through individual contracts on specified periods or through the attribution of specific operations to contractors who had the required skill and labour force. The cooperative was requested to have a management team headed by a President, a Secretary, with field staff to supervise contractors. The cooperative was also entitled to raise money through compulsory monthly payments from the planters. This sum was 2,052 FCFA (3.13€) /ha and spontaneous contributions from the planters depending on the need, the taking of credit from SOCAPALM and MC2 to be paid with minimal interest. The first cooperative to be part of the scheme was Socofepnyk, but it did not last long as power tussle inside the cooperative led to its splitting into two different entities and another cooperative named "Le Planteur" emerged. In June 2013, another cooperative named "SCAB (Société Coopérative Agri-Business)" was created resulting from another split of "Le Planteur". When the management of the plots was in the hands of these cooperatives, the management staff did very little to follow up agricultural activities on the plots not to mention the embezzlement of funds originally dedicated to plot management. This poor situation led SOCAPALM to take full control of the management of the plots as soon as the previous director of the project was sacked for the misappropriation of funds destined for the project in 2011.

At present, SOCAPALM manages all the farming operations. The company recruits temporary and contracted workers and its staff schedules and assesses all field operations. All expenses incurred in the course of farm operations with exception of FFB transportation and road maintenance are billed to the planter who in turn is requested to supply FFB to SOCAPALM for repayment. SOCAPALM began to replace old palm stands in 2008 at farmers' expense as shown on Table 2.

Table 2 : Yearly replanting program for the old palms

	Area already replanted				**Area expected to be replanted**				**Total**
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**(ha)**
Areas (ha)	300	300	300	-	300	601	400	400	2,601

Source: Field survey in SOCAPALM Eseka, 2013

SOCAPALM is paying back the loan contracted with Afriland First Bank on a monthly basis on behalf of the planters whose plots are unable to meet up with the credit re-imbursement. It is thus expected that by 2015, the loan of Afriland First Bank would have been fully paid. That notwithstanding; the farmers will have to pay back this money to SOCAPALM through the production and supply of FFB from their plots. The size of a plot averages 8 to 10 hectares and the amount of money to pay for a given plot depends on the distance to the mill and on the yield and height of the palms. As such the cost per plot ranges from 262,000 FCFA/ha to 1,006,000 FCFA/ha (399.42 to 1,533.64 €/ha). Indeed, a farmer who owns a 10 ha plot with a 1,006,000 FCFA/ha rate is expected to pay: (1,006,000 FCFA × 10 ha) + 8/100 × (1,006,000FCFA × 10 ha) = 10,806,480 FCFA (16,474.4€) including the payment of 8% interest.

It is from the main capital that Afriland First Bank had to pay 95% to SOCAPALM on behalf of the planters, with the planters themselves paying just 5%. This means that in the present case, the farmer is supposed to reimburse the sum of (95/100 × 10,006,000 + 8/100 ×10,006,000) FCFA = 10,306,180 FCFA (15,711.69€) and this credit is supposed to be repaid after 8 years. So 10,306,180 FCFA/8 years = 1,288,272.5 FCFA/year (1,963.96€/year) is the amount of money the planter is supposed to reimburse per year.

In order to complete the reimbursement on a monthly basis, a schedule (Table 3) was designed which took into account changes in FFB yields during the year? The January to June period is the peak season, while the July-December one is considered as the low season for oil palm fruit production.

Table 3 : Monthly distribution in % of yearly sum for credit reimbursement

Month	% of monthly repayment	% cumulated
January	10.0%	10.0%
February	14.0%	24.0%
March	19.0%	43.0%
April	17.0%	60.0%
May	13.0%	73.0%
June	7.0%	80.0%
July	4.0%	84.0%
August	2.0%	86.0%
September	2.0%	88.0%
October	3.0%	91.0%
November	4.0%	95.0%
December	5.0%	100.0%

Source: SOCAPALM Eseka contract

The order of monthly payments from the farmer is as follows: 1) the debt to Afriland First Bank for that month, 2) the cost of various farm operations for that month and 3) payment of the cooperative management staff. The rest of the income if any is kept in the farmer's account at MC2, the micro-finance institution acting for farmers. During interviews, farmers indicated that the cost of replanting that they used to pay in 2009 at 359,238 FCFA/ha (547.66 €/ha) had increased to between 500,000 FCFA and 550,000 FCFA/ha (762.25 to 838.47€/ha) in 2013. Table 4 shows the costs distribution for the replanting of one hectare of old palm grove (November 2009). According to the Director of SOCAPALM Eseka, the cost of various farm operations has increased because at first not all the operations were performed: for example the old palms were not fertilized but today the replanted ones receive fertilisers, which increases the costs.

Table 4 : Cost of replanting per hectare in 2009

Different replanting operations	Cost in FCFA (Euros)/ hectare
Felling of old palms	90,000 (137.2€)
Trimming and windrowing of fronds	6,500 (9.91€)
Lining	4,000 (6.1€)
Cutting and transportation of pegs	2,145 (3.27€)
Holing	7,150 (10.9€)
Loading of plants	2,860 (4.36€)
Off-loading and transportation of plants close to the hole	3,575 (5.45€)
Planting and application of fertilizer	5,720 (8.72€)
Phosphate tricalcium	249 (0.38€)
Fully grown oil palm seedlings ×143	224,169 (341.74€)
Transportation cost	12,870 (19.62€)
Total	**359,238 (547.66€)**

Source: Field survey in SOCAPALM Eseka, 2013.

Our survey shows that more men than women own plots within the SOCAPALM Eseka scheme. Out of the 102 owners, female owners are just about 15: they work in the public or private sector, with an average age of 45 to 55 years. When the project started, the maintenance of plots was in the hands of the planters through their cooperative, with some technical assistance from SOCAPALM. This situation did not last long as some of the farm operations were signed on paper but not executed in the field. The situation has then been 'rescued' by SOCAPALM which took over the full management of the plot, but then farmers are complaining about increasing costs. The result is that such plots are not yielding any benefit to the grower at present and farmers are claiming that they are presently working and losing money, since after all monthly payments have been deducted, there is nothing left. Another striking problem is labour, because most of the workforce comes from the Northwestern and Northern regions of Cameroon. The young natives from Eseka consider field work as too strenuous and they do not accept waiting for payout until the end of each month. Power struggle in cooperatives is leading to recurrent splitting and subsequent generation of new entities thus weakening the bargaining force with the company. Farmers also complain about the absence of a regulatory body in charge not only of establishing monthly prices for FFB based on market trends for CPO but also of following up the contract signed between farmers and SOCAPALM and ensuring that their implementation is fairly balanced between both parties.

2.4.9.4 A comparaison between FONADER and Afriland First Bank sponsored schemes

The FONADER sponsored scheme was established by the Government of Cameroon with the aim of fighting poverty with a focus on local populations living close to the agro-industries. Among the criteria for eligibility the candidate had to get 75% of income from farming activities; the farmer was requested to own land accredited by the village chief; he was to provide labour from his household and he was requested to be at least 25 years of age.

Candidates who were eligible to join the FONADER scheme were not supposed to pay any entrance fee, contrary to the Afriland First Bank sponsored scheme, in which eligible candidates were supposed to pay 5% of the cost as an initial settlement. Also FONADER was using public funds, while Afriland First Bank is a private bank.

The mechanisms of the two schemes are not so different. Indeed the money for the development of plantations for smallholders in the FONADER scheme was handed to the company in cash and the company was requested to develop the smallholder plot and provide the necessary in-kind resources and technical services to the smallholder or landowner. The company made profit from the supply of Fresh Fruit Bunches from the smallholders' farms and it also determined the price of FFB. The farmers could repay their loan through the supply of FFB to the company. The slight difference in the two schemes is that in the case of Afriland Firstbank, both SOCAPALM and the German Development Bank provided a guarantee. In case the smallholders do not comply with the repayment of their credit in due time, the company would be forced to use this money to complete the loan on behalf of the farmers. This is a strong incentive for the company to push each farmer to pay back his loan.

Farmers involved in the scheme are quite optimistic about the future: after the company would have completed the replanting program in 2015, the oldest replanted palms will still yield during 17 years before the end of their economic life. During this period the yields will enable farmers to make enough profit. At present, the average yields for the old palms stands at 6-7 tons FFB/ha/year. Performance of newly replanted palms is expected to reach 15 to 20 tons FFB/ha at their most productive age (8 to 15 years) especially under good management practices. Farmers are still worried about theft of bunches from the young producing palms.

2.4.10 Stagnation in production for public oil palm companies and oil palm smallholders

By 2008 the total surface area and production for agro-industries stood at 67,075 ha and 131,485 tons of CPO, while the surface area and production for smallholders stood at 68,900 ha and 82,680 tons of CPO as shown on table 5 below. Data from smallholders is mostly based on estimates as a national census of all smallholder plantations is yet to be carried out. There is a marked difference in the average yield of CPO/ha for agro-industries and smallholders. In 2003 the average yield of CPO and red palm oil for agro-industries and smallholders stood at 1.93 ton/ha and 1.2 ton respectively, five years later in 2008 we have 1.96 ton and 1.2 ton respectively. In table 6 which represents yield data collected in 2013, the average yield for smallholders is at 0.9 ton of CPO/ha as opposed to an average yield for agro-industries which increased to 2.3 ton CPO/ha, with the public companies recording very low yields of as low as 1.41 ton of CPO/ha at Pamol. The reasons for the very low yields could be attributed to the aging oil palm plantations, little or no fertilizer application, bad management practices and the use of poor quality planting materials as noticed with the smallholder oil palm sector. It is also important to note that private companies register better yields (table 6), and this yield is not even up to the average yield of 3.5 to 5 ton CPO/ha recorded by Indonesian smallholders and agro-industry respectively.

Table 5 : Surface areas and production figures until 2008

	2003	2004	2005	2006	2007	2008
Agro-industries						
Surface area (ha)	60,318	61,476	63,481	65,117	67,075	67,075
Production (in tons)	116,520	119,390	127,435	128,854	131,485	131,485
Tons CPO/ha	1.93	1.94	2.0	1.98	1.96	1.96
Smallholders						
Surface area (ha)	43,900	48,900	53,900	58,900	63,900	68,900
Production (in tons)	52,680	58,680	64,680	70,680	76,680	82,680
Tons CPO/ha	1.2	1.2	1.2	1.2	1.2	1.2
Total						
Surface area (ha)	104,218	110,376	117,381	119,017	130,975	135,975
Production (in tons)	169,200	178,070	192,115	199,534	208,165	214,165

Source: adapted from Lebailly and Tentchou, 2009

Table 6 : Surface areas and production figures for agro-industries and smallholders in 2013

Year 2013	Surface area (ha)	Mature area (ha)	Immature area (ha)	Production tons CPO	Yield tons CPO/ha
CDC	14,352	10,250	4,102	18,309	1.79
Pamol	9,526	9,133	393	12,878	1.41
SAFACAM	4,792	3,936	856	11,742	2.98
Ferme Suisse (SPFS)	3683	-	-	11,000	2.99
SOCAPALM	32,000	-	-	86,000	2.69
Smallholder plantations	40,000-100,000	-	-	90,000	2.25-0.9
Total	100,670-160,670			229,929	

Source: Field survey, data from agro-industries, 2013.

2.4.11 Current measures adopted by agro-industries to strengthen links with oil palm smallholders

Several agro-industries have tried to step up attractive prices for a kilogram of FFB as a way of directing more smallholders towards the company mill. As an example, CDC increased the price for a kilogram of FFB from 45 to 50 FCFA (0.07 to 0.08€) in 2011, while Pamol did the same in 2012 from 42 to 46 FCFA (0.06 to 0.07€) per kilogram FFB and the immediate payment in cash of at least 50% for a minimum quantity of FFB supplied to the company.

Currently, Pamol buys a kilogram of FFB at 55 FCFA (0.08€) at mill gate and 51 FCFA (0.078€) farm gate. The price offered by SOCAPALM stands at 48 FCFA (0.07€)/kg FFB. The cost to transport one ton of FFB from the farm to the mill is paid as follows: 4 FCFA (6.1×10^{-3} €) per kg FFB at Pamol; 2 to 3 FCFA (3.1×10^{-3} to 4.6×10^{-3} €) at CDC and 5 FCFA (7.6×10^{-3}€) at SOCAPALM. Companies do not take into account the distance from the smallholder plantation to the company's mill, meanwhile independent transporters would ask smallholders to pay for transportation cost in accordance with the weight and the distance from the smallholder plantation to the industrial mill. Thus smallholders end up spending about 8,000 to 12,000 FCFA (12.2 to 18.29 €) per ton FFB on transportation cost. However, such incentive measures decided by companies are not enough and their impact is hampered by several structural factors which include:

- The emergence of artisanal mills which pay instant cash and better prices to farmers;
- The poor status of road infrastructures / transportation logistics, which leads to high transportation cost for smallholders;

- The recurrent breakdowns in industrial mills due to worn-out equipment and poor investment and maintenance;
- A low purchase price for FFB and the absence of any regulatory framework from the government that favors partnership.

2.4.12 The interest shown by foreign agro-industrial companies to invest in Cameroon

About six or more foreign agro-industrial companies mostly from Southeast Asia are presently knocking at the door of the Cameroonian Government, expressing their interest to develop oil palm plantations on the Southern forest zone of the country. At present, the total surface area requested by the newcomers exceeds one million hectares (Hoyle and Levang, 2012). The question that comes to focus is what model will be used for these new companies to acquire these surfaces without posing a threat to the forest and that will not create social conflicts with the local and indigenous population? The government on its part is still to come up with a clear and convincing policy regarding the development of the oil palm sector in Cameroon.

2.4.13 Future prospects for the sector

2.4.13.1 The National Palm Oil Strategy

In recent years there has been some major challenges facing the palm oil industry in the World. In Indonesia and Malaysia, which are the major producers of palm oil in the world, with about 87 percent of total world production, agro-industries in these countries have been faced with a lot of challenges. Some of these challenges include: land conflicts with the local populations, moratorium imposed to companies in Indonesia which limits their expansion, the increasing pressure on these companies to certify their production with RSPO or ISPO as a means to access better market opportunities, as well as mechanisms of REDD+. All these moves have greatly slowed down the rate at which these companies can acquire more land for production. As a result, these agro-industries have seen Africa as an ideal place for them to further expand their plantation. As already mentioned, about six foreign companies have been knocking at the door of the Cameroonian Government expressing their wish to cultivate oil palm in the country. It is true that oil palm has been identified by the Cameroonian government as one of those crops that could greatly uplift people out of poverty provided enough attention is put on it with regards to the poverty strategy document for an emerging Cameroon by 2035, and presently, Cameroon is a net importer of palm oil. The government is

still to come up with a clear and convincing policy for the sustainable development of the oil palm industry in Cameroon. A glaring example is seen with the Herakles Farms saga. Some of the flaws exposed are not only the responsibility of the company.

It is because of some of these challenges that the national palm oil strategy came into being with the signing of a ministerial decision No. 00250/CAB/MINADER/29 on July 2013 setting up a committee. This committee which is under the leadership of the Ministry of Agriculture and Rural Development, also involves members from other key ministries, research institutions, the civil society, agro-industries, oil palm smallholders etc. The objective is to come up with a road map for the palm oil industry in Cameroon. The national palm oil strategy targets 3 major areas. These include modalities to boost production in the medium and long term, the sustainable development of the sector that will take into consideration economic viability, social cohesion and environmental protection, and lastly the putting in place of legal and institutional reforms especially for new companies wishing to develop oil palm plantations. Government seriously awaits the results of this committee.

2.4.13.2 The National Interpretation of RSPO

Within the last decade, the palm oil industry in the world has been on the forefront as one of the industries with enormous negative impact on forests, people, and the world climate (Sayer et al., 2012). Oil palm companies in countries like Indonesia and Malaysia (the two major producers of crude palm oil), are under pressure from conservation and social NGOs, and consumers of downstream products to ensure that their businesses are done sustainably; else they would lose their business permit as is the case with the Indonesian Sustainable Palm Oil (ISPO), or a complete refusal to consume their products. All this pressure has given rise to many certification bodies which include: RFS (Renewable Fuel Standard), ISCC (International Sustainable Carbon Certification), RSPO (Round Table of Sustainable Palm Oil), etc. These certification bodies are to ensure that the oil palm industry is developed and managed in a sustainable manner. These certification bodies put in place a set of principles and criteria that must be fulfilled by the companies, with the use of independent auditors at specified duration for companies wishing to be certified. The advantage of certification is first of all an increase in market and funding opportunities for the company in question. Certification also gives an opportunity for the company to take stock of its activities and think of the way forward.

The RSPO, is just one of the many certification bodies currently existing. Created in 2004, with no restriction in membership as it has members coming from almost all professional backgrounds, it has the mandate to ensure that the palm oil industries operate in a sustainable manner. It has 8 principles with about 37 criteria which oil palm companies need to comply with in order for them to be certified. The 8 principles of RSPO include: commitment to transparency, compliance with applicable laws and regulations, commitment to long-term economic and financial viability, use of appropriate best practices by growers and millers, environmental responsibility and conservation of natural resources and biodiversity, responsible consideration of employees and of individuals and communities affected by growers and millers (Rival and Levang, 2013).

The Cameroonian palm oil industries and smallholders may not see the need to become certified with RSPO at present, because of the current domestic and sub-regional market for the sale of the product which is yet unsaturated. Besides the availability of market, the country is still a net importer of crude palm oil with a total quantity of 50,000 tons CPO in 2011, and 80,000 tons CPO in 2012 in order to feed its downstream industries. But with the arrival of new companies to develop oil palm plantations, there is an urgent need for the elaboration of a national interpretation of RSPO not only for marketing prerogatives in the future, but also to reduce the negative consequences of oil palm development on the forest, and social conflict for land with indigenous and local population. It is within this backdrop that some workshops on capacity building for the elaboration of the national interpretation of RSPO sponsored by WWF, Proforest and ZSL, has already started in 2012 with invited participants being the oil palm smallholders, palm oil industries, transformation companies, civil societies, social and environmental NGO's, government officials, research institutions with regards to adapting the principles and criteria of RSPO to the Cameroonian context.

2.5 DISCUSSION:

2.5.1 What future for the oil palm industry in Cameroon?

2.5.1.1 Increasing investments from the local elite?

Elites in Cameroon considered oil palm plantations not only as a way of securing an additional profit apart from their main source of income but also as a means of acquiring land that could be transferred to their heirs. It is also a way to boost their social status inside their community of origin (Levang and Nkongho, 2012; Ndjogui and Levang, 2013). This in turn

helped in the stimulation of petty business in rural settings. It would thus be unfair to reduce the involvement of elites to land "grabbing". At a time when the State's involvement in the agricultural sector is almost insignificant, elites are virtually the only engine of agricultural development in Cameroon. Following the recurrent failure of major projects for agricultural development in the late 1980s, the implementation of the Structural Adjustment Programme in 1989 resulted in the withdrawal of the State from agricultural development and this has led to the collapse of the agropastoral infrastructure in the country (Fonjong, 2004). This withdrawal was concomitant with a fall in prices of major agricultural exports and it led to the virtual disappearance of sources of rural finance and consequently the contraction of economic activity. Hopes in the development of the microfinance sector were exaggerated, and traditional informal saving structures like the *tontines* remained the only financial instrument available to rural households. Unfortunately, the amounts of money redistributed by *tontines* are too small to support agricultural development projects and they are usually restricted to the support of social and cultural activities. As a result, the only efficient financial support in rural areas to date is provided by the elites. Of course, this funding is dedicated to activities initiated and controlled by the elites themselves. But the supply of money for the purchase of land is redistributed to landowners of the village and the establishment of plantations generates significant employment opportunities for the poorest households. Unfortunately the money raised by the sale of land is seldom used to support any productive investment and employment opportunities are mainly captured by migrants. Should we then prohibit or discourage investment by elites? In this case, they are not responsible for the misuse of money from the sale of land by the villagers. Clearly, the problem that is facing the rural poor in Cameroon comes less from the elites than from the absence of alternative sources of funding for agricultural development. Elites merely fill a vacuum and most probably the situation of the rural population will be even more precarious without their investments.

The recent interest of large oil palm companies from Southeast Asia to the Congo Basin and particularly to Cameroon can be either a blessing or a curse for the non-industrial plantation sector. If the Government allows such companies to settle under the agro-industrial classic model, small farmers, villagers and elite will be quickly marginalized because they will be unable to compete. On the contrary, if the Government authorizes the granting of land to big companies with the mandatory integration of a large number of smallholders along the lines of NES schemes then it will build on the potential of poverty reduction provided by the smart cultivation of oil palm (Levang and Nkongho, 2012).

2.5.1.2 A revamped partnership between smallholders and agro-industries?

Previous studies showed that fair and balanced agreements between agro-industries and smallholders can be of mutual benefit when compared to the standard agro-industrial model. Such agreements provide a means of cheap and effective use of local people as labor for agribusiness capitalist. In fact, the village plantations are explicitly recognized as a way to outsource production. Konings (1986) considers the CDC village plantation to be less efficient, because producers bare almost all the production costs as they get inputs and agricultural services in the form of loans that must be repaid with interest after harvest; and more, agribusiness escapes loads from a complete proletarianization (payment of family members or casual laborers employed by the planter, social security, housing, etc.). Smallholder′s schemes provide a less risky production system for agro-industries because the fluctuation of prices on the world market automatically affects producers who also bear the risk of crop failure. According to the World Bank **(**Carrère, 2010; Nkongho et al., 2014**)** the benefits derived from village plantations are numerous. Indeed they guarantee a stable income to planters, they promote security in land tenure and they enhance the monetization of the rural settings thus generating development. It is also argued that village plantations induce individualization of land and contractual liabilities (debts) that destabilize traditional institutions. Smallholder schemes are also suspected of further marginalizing the most vulnerable social groups (youth and women) and finally they can deepen inequalities as elites stand out even more from the rest of the community (Gerber, 2008; Carrère, 2010).

According to Rival and Levang (2013), the choice of the model for oil palm development is not a technical one, but a societal choice. Egbe (2004) also stresses the need for rural women to be taken into consideration concerning funding opportunities for agricultural projects to alleviate poverty.

2.5.1.3 New foreign investors: Herakles Farms as the first of a new kind of investors

Due to increasing global demand for palm oil and suitable conditions for oil palm development, Cameroon has witnessed a sharp rise in investors' enquiries seeking land to plant oil palm since 2009. At least six companies are currently trying to secure over 1 million hectares of land for the production of palm oil in the southern forest zone. These companies include Sithe Global Sustainable Oils Cameroon (SGSOC), Sime Darby, Biopalm, Goodhope, PalmCo and Smart Holdings, etc.

Sithe Global Sustainable Oils Cameroon (SGSOC) is a locally registered company in Cameroon, owned by Herakles Farms, (affiliate of Herakles Capital), based in New York USA. Herakles Farms acquired 100 percent ownership of SG Sustainable Oils from Sithe Global, an affiliate of the Blackstone Group, in 2009 (Hoyle and Levang, 2012).

At first, the total concession requested from government by SGSOC was 73,086 ha (30,600ha in Ndian Division and 42,600 ha in Kupe-Muanenguba Division). The site of this proposed plantation lies inside a globally recognized biodiversity hotspot between the protected areas of Korup National Park, Rumpi Hills Forest Reserve, Bakossi National Park and Banyang-Mbo Wildlife Sanctuary. These are all key habitats for primates, elephants, buffaloes and a multitude of rare, endemic and IUCN red-listed species of animals and plants.

In September 2009, SGSOC signed an agreement with the Government of Cameroon's Ministry of Economy, Planning and Regional Development (MINEPAT). In 2010, SGSOC started the Environmental and Social Impact Assessment for the project. In September 2011, MINEP issued SGSOC an Environmental Certificate. SGSOC and Herakles Farms were members of RSPO, the Roundtable for Sustainable Palm Oil (Hoyle and Levang 2012). SGSOC had to face stiff resistance from both the local population and local and international conservation NGOs. The local population complained that the project did not sufficiently address their needs and accused the government / company of land expropriation, a situation which, if not addressed carefully, can put the future generation into jeopardy as very little land will be available for subsistence farming and other developmental projects. The company was also accused of lack of transparency in its dealings with some key ministries in the government. Local and international conservation NGOs claimed that the company did not sufficiently address issues related to the conservation of fauna and flora as its concession areas were surrounded by four protected areas of high conservation value forest (HCVF). The priorities of the company at first did not contain any will to develop the smallholder oil palm sector in its area of establishment. The company on its part accused the local population of being manipulated by social and environmental NGOs for selfish motives, stressing the fact that the proposed area will greatly benefit from the much-awaited development needed by the local population through employment opportunities and social / infrastructural development.

After all the imbroglio between Herakles Farms, the local population and social and environmental NGOs, the Government of Cameroon finally decided by presidential decree (2013/416 of 25 November 2013) to grant Herakles Farms a provisional concession of 13,195 ha in Nguti subdivision of Kupe Muanenguba Division. Decree No. 2013/418 of 25 November 2013 granted Herakles Farms another provisional concession of 5,384 ha in

Mundemba sub-division and decree No. 2013/417 of November 2013 granted another provisional concession of 1,264 ha to Herakles Farms in Toko sub-division, both in Ndian division. Thus a total concession area of 19,843 ha (from its previous demand of 73,086 ha) was granted to Herakles Farms from the National forest domain. This means that 27.2% of the total concession requested by SGSOC was finally granted by the Government on a provisional basis. Apart from the concession leased by the Government to SGSOC to develop a nucleus estate, the company will also have to develop 10,000 ha of land for farmers from the surrounding villages, with customary claims to SGSOC concession as a way to redress some of the socio-economic plights of the local population.

2.5.1.4 What needs to be encouraged for oil palm development in Cameroon?

The development of the oil palm sector in Cameroon should embrace a broad perspective considering social, environmental and economic realities. If planned carefully, the development of oil palm can lead to strong economic development of the region, as well as a reduction in rural poverty. If not, the extension of palm oil plantations may result in the loss of high conservation value areas and in negative impacts on the livelihood of local communities and indigenous people (Skurtis et al., 2010; Hoyle and Levang, 2012).

In order to amplify the positive effects and reduce the negative impacts, there is a need for the government of Cameroon and involved stakeholders to develop a national palm oil strategy that can steer the rapid expansion of the sector and also ensure that expanded production does contribute to Cameroon's sustainable development goals. In order to achieve this goal, it is pivotal that the government urgently engages all stakeholders from the outset (including government departments, companies, local communities, international and local NGOs).

The development of oil palm in Cameroon needs to benefit from the experience of major producing countries by implementing such expansion according to the highest international standards (such as the ones established by IFC, the International Finance Corporation from the World Bank Group). A strategy for the smart development of the oil palm sector should consider the following directions:

- Invest in productivity and yield increase in the existing oil palm plantations using selected and certified planting material and adopting best management practices.
- Ensure that all future palm oil expansion in Cameroon is developed in a sustainable way with minimum impact on carbon emission levels and biodiversity, by focusing first on"degraded lands".

- Avoid the overall reduction of the primary forests with an emphasis on development of areas which are already deforested or cleared.
- All new oil palm development in Cameroon should adopt and implement the principles and criteria of the Roundtable for Sustainable Palm Oil (RSPO). The requirement to comply with the RSPO standards for palm oil production in Cameroon should be part of national policy and regulations.
- Make sure that smallholders benefit from the development of agro-industrial complexes, either by establishing outgrowers contracts following the current model in Southeast Asia (where a percentage of at least 30% of the total area is reserved for smallholders) or by establishing measures to support family farming (provision of selected seedlings, inputs, technical support, training, etc.).
- The rights and roles of indigenous people and local communities should be respected, notably the adoption of free, prior and informed consent (FPIC) policies and the transparent communication / publicity about any proposed plans to develop new plantations.
- Special attention should be paid to the reviewing of regulations related to land acquisitions in order to protect and secure local land rights (Skurtis et al, 2010; Hoyle and Levang, 2012; Feintrenie and Rafflegeau, 2012; Feintrenie, 2013; Sayer et al., 2013).

2.6 CONCLUSION

Before the independence and re-unification of the British and French Cameroon in 1961, very little was done to build partnership between agro-industries and oil palm smallholders. While agro-industries like Pamol and CDC benefitted from the utilization of quality *tenera* hybrid seeds and better milling efficiency, oil palm smallholders, on the other hand, harvested the native dura variety either from wild oil palm groves or planted in their farmland mostly in agroforestry based systems. Smallholders also used artisanal traditional milling methods with much lower extraction rates and unhygienic conditions to produce red palm oil.

After independence and re-unification, as a means to boost oil palm production and fight poverty, the Government of Cameroon established SOCAPALM under a Nucleus Estate Smallholder model and extended this model to CDC and Pamol under the FONADER development scheme. Although this project greatly improved livelihoods through the provision of technical assistance, quality planting material and inputs like fertilizers,

herbicides and pesticides at subsidized rates, the project lasted only 12 years, from 1978 to 1990. The project also recorded numerous pitfalls and FONADER underwent bankruptcy. Leaders used their positions in administration and managed to divert benefits that were meant for the poor. Moreover, the project targeted only wealthy locals who owned land and did not provide any opportunities for the marginalized class like unemployed youths and women. Besides, contracts linking smallholders and agro-industries were unilaterally negotiated without the involvement of the local population.

The project also proved inefficient in the area of monitoring and evaluation by independent bodies. There was no strong incentive from companies to make sure that smallholders did repay their credit since the loan came from a completely different institution. Smallholders complained about the absence of transparency on the total amount to be reimbursed as well as on the modalities of reimbursement. After the collapse of the FONADER scheme and the implementation of the structural adjustment program, the Government did very little to develop the oil palm sector and to foster partnership between smallholders and agro-industries. The *villagisation* project sponsored by Afriland First Bank, a pilot project of SOCAPALM Eseka with smallholders is not very different from the FONADER scheme, as it is marked with similar flaws and shortcomings.

As opposed to other cash crops like cocoa, coffee, and rubber that rely much on the international market, palm oil benefits from an increasing domestic and sub-regional market. The oil palm areas cultivated by agro-industries has remained relatively stable over the years while areas exploited by smallholders have tremendously increased over a short period, although recording very poor yields. With the arrival of new oil palm plantation companies in Cameroon and the interest shown by already established companies to expand their cultivated areas, there will be significant changes (either positive or negative) on the oil palm landscape in the near future. The new companies, just like their older counterparts, will be requesting new areas to develop / expand their plantations. Public attention must be paid to the granting of these areas in order to avoid any additional forest conversion, habitat destruction for wild animals, social crises with indigenous and local populations and increased pollution to the environment. Also the domestic and sub-regional market that used to exist may drastically be saturated and as such there will be need for new markets not only for agro-industries but also for smallholders.

Our study proposes the development of a national strategy document for the oil palm industry that will serve as a road map for the new and old palm oil companies seeking land to develop oil palm. Such a consensus document should focus on yield improvement, on the

establishment of legal and institutional reforms to acquire land from the Government, the inclusion of a national interpretation of RSPO Principles and criteria to guarantee future markets and the securing of appropriate funds.

Lastly, there is a clear need for a political will and the promotion of transparent and innovative measures by government in order to strengthen partnership between agro-industries and oil palm smallholders. The shortcomings of the FONADER and Afriland First Bank sponsored schemes call for future partnership schemes in the oil palm sector to be mutually beneficial and sustainable. All these measures will greatly help in avoiding the adverse effects of oil palm development and in meeting up with the poverty reduction strategy put in place by the government of Cameroon.

3 CHAPTER THREE

STRENGTHS AND WEAKNESSES OF THE SMALLHOLDER OIL PALM SECTOR IN CAMEROON

3.1 ABSTRACT

The present study is an evaluation of the current strengths and weaknesses of the oil palm smallholder sector in Cameroon, or more precisely of the non-industrial sector, as some holdings owned by elites can reach hundreds of hectares. A randomized sample of oil palm producers was chosen after categorization into elites, migrants, natives and company workers (past and present) in four palm oil production basins in the southern part of the country. A total of 176 semi-structured questionnaires were administered. The production basins included: Eseka, Dibombari, Muyuka and Lobe. Results from the study revealed that elites owned larger average areas (41.3 ha) than the other categories of oil palm producers. All categories recorded low average plantation yields, ranging from 7 to 8.4 t FFB/ha/year (with minimum yields of 3 t FFB/ha). Though the elites showed better bargaining power and higher income, all categories of producers faced similar problems such as the high cost of inputs with no governmental subsidies, difficulty in accessing loans with low interest rates and use of rudimentary working tools. Despite such weaknesses, the sector also demonstrated some strengths, for example causing little damage to the primary forest when compared to agro-industrial plantations, the availability of a domestic and subregional market for red palm oil, the availability of artisanal mills with low extraction rates and the ability to generate more income for the producers. There is a need for government policies that will strengthen the partnership between small and medium oil palm producers and agro-industries in order to comply with the poverty reduction strategy initiated by the government of Cameroon.

Keywords: family farming, FONADER, oil crops, poverty alleviation, sustainability

3.2 INTRODUCTION

Oil palm (*Elœis guineensis* Jacq.) is not new to Cameroon, since it is indigenous to the countries bordering the Gulf of Guinea. People in the rainforest region of Cameroon used to harvest fresh fruit bunches (FFB) from the wild dura variety to produce palm oil and kernel oil, and fell and tap old stands of both dura and pisifera varieties to produce palm wine, which is a much cherished liquor. The hybrid tenera oil palm variety produces the highest yield—up to eight times more—compared to other vegetable oil crops like soybean, sunflower or rapeseed (Mathew et al. 2007; Feintrenie and Rafflegeau 2012; Jacquemard 2012). According to agro-ecological data from IRAD (*Institut de Recherche Agronomique pour le Développement*) and the Cameroon Statistic Directory, five of Cameroon's ten regions are suitable for oil palm cultivation. These five regions include: the Southwest, Littoral, South, Center and East regions; with respect to rainfall, the most suitable regions for oil palm cultivation include Southwest, Littoral, part of Center (Nyong et Kelle Division) and part of South (Ocean Division). This also partly explains why all the oil palm agro-industries are located in the latter (Cf. fig 3 & 4). All five regions are located in the humid tropical part of the country and are noted for having suitable climate and soil conditions for oil palm

cultivation. Littoral, Southwest and Centre regions host a significant number of palm oil producers and present a longstanding historical relationship between smallholders and major agro-industrial companies like the Cameroon Development Cooperation (CDC), Pamol and SOCAPALM. Four major palm oil production basins were developed in relation to the three major palm oil companies. These basins are Dibombari (Littoral), Eseka (Center), Muyuka (Southwest) and Lobe/ Mundemba (Southwest).

The main enterprises located in these zones include SOCAPALM (Dibombari and Eseka), CDC (Muyuka) and Pamol (Lobe/ Mundemba) (Cf. fig 3). Five agro-industries are involved in the production of crude palm oil in Cameroon. These agro-industries include "Société des Palmeraies de la Ferme Suisse (SPFS)" established in 1907, Pamol established in 1928, CDC established in 1947/48,"Société Africaine Forestière et Agricole du Cameroun (SAFACAM)" established in 1897 as a rubber company and effectively started cultivating oil palm in 1959, and "La Société Camerounaise de Palmeraies" (SOCAPALM) established in 1968. Today, three of these agro-industries; SPFS, SAFACAM and SOCAPALM are private companies managed by the Bolloré group, while Pamol and CDC are public companies.

During the first palm oil development plan in1977/78, the government of Cameroon as part of its poverty reduction strategy, thought it wise to establish the smallholder oil palm sector by providing quality planting material, inputs and technical expertise to smallholders through major oil palm companies like Pamol, CDC and SOCAPALM, with funds from the World Bank, under the control of *Fonds National du Développement Agricole* (FONADER). This gave birth to what is usually called the first generation of oil palm smallholders. With the collapse of FONADER in the early 1990s due to the economic crisis, a new generation of palm oil producers (second generation) emerged with larger plantation surface areas (Konings 1986). The under-contract oil palm smallholders were those established in the late 1970s with funds from FONADER (Elong 2003), and comprise many plasma or satellite oil palm plantations surrounding the nucleus mill. The plasma plantations (plantations owned by smallholders, but developed by agro-industries with funds from FONADER) comprise 2–5 ha oil palm plantations established within a maximum distance of 30 km from the companies' nucleus mill, on an in-kind credit basis by the aforementioned companies to selected oil palm smallholders who showed proof of land ownership. The smallholders were to supply the labor force, while the company had to deliver quality planting material, essential inputs like fertilizers, pesticides and fungicides together with technical skills to the smallholders. In return, the smallholder was supposed to deliver all the harvested FFB to the company's nucleus mill as soon as the palms matured and a percentage was deducted from the sales to

reimburse the credit from FONADER. These smallholders are no longer under formal contract with any of the companies, and the supply of bunches to the nucleus mill is at the discretion of the smallholder during peak and low season. The independent palm oil producers are self-funded oil palm growers, installed within or out of basins carved out during the first oil palm development plan in the late 1970s. These categories of palm oil producers need to harvest and process their FFB themselves because of their distance from the industrial mills, which additionally increases the profitability of their oil palm plantation through the highest added value of palm oil over the sale of FFB. History holds that oil palm was taken from Africa and then introduced to Latin America and Southeast Asia by the end of the 19th century. Today Indonesia and Malaysia alone produce 87% of the world's crude palm oil (CPO), while Cameroon stands at the 13thposition in terms of world production of CPO (www.indexmundi.com). According to Hoyle and Levang (2012), Cameroon produced 230,000 tons of CPO in 2010 across an estate of approximately 190,000 ha. The production of CPO in Cameroon is distributed across three plantation types:

- Agro-industrial plantations: 58,860 ha producing120,000 tons CPO;
- Under-contract private plantations: 35,000 ha producing 30,000 tons CPO (plantations developed during the FONADER period);
- Independent palm oil producers: occupying an estimated 100,000 ha producing approximately 80,000 tons CPO.

The terms "oil palm smallholders" and "plantations villageoises" are both used in Cameroon to describe the individual ownership of an oil palm plantation. Both terms are inadequate as some holdings can be rather large (up to 1000 ha), and none of these holdings are village owned (Bakoumé 2006; Levangand Nkongho 2012). Even if RSPO (the Roundtable on Sustainable Palm Oil – www.rspo.org) defines smallholders as farmers with less than 50 ha of oil palm, other studies consider the smallholder upper limit with a 5 ha threshold. A more appropriate partitioning would be: smallholders (0–5 ha), medium-holders (5–20 ha) and large-holders (more than 20 ha) based on the size of the plantation and the management prerogative likely to be put in place by the oil palm grower. Thus, the best wording would be "non-industrial oil palm plantations". For greater convenience we will here after use "palm oil producers", "oil palm planters" or "oil palm growers", when referring to all kinds of non-industrial oil palm plantations. Previous studies have stressed the massive involvement of elites in the development of oil palm plantations especially after the collapse of the FONADER-sponsored smallholder scheme that was designed for poor farmers and the advent of the economic crisis in the early 1990 (Elong2003; Ngambi et al. 2011; Obam and Elong

2011; Obam and Tchonang Goudjou 2011; Levang and Nkongho 2012). The yield of oil palm in Cameroon is not distributed evenly in the course of the year and it takes 5.5–6 months for the female inflorescence pollinated by the palm weevil *Elæidobius kamerunicus* to become fully mature and ready for harvesting (Syed 1982; Hornus et al. 1987). There are three distinct seasons of production: these include the low production season, which falls within the months July to September; the mid-peak period, which falls within the months October to January; and the peak period which falls within the months of February to June. A hectare of oil palm plantation yielding 8 tons FFB/ha/year, can generate 5 tons FFB during the peak production season, 2 tons FFB during the mid-peak season and 1 ton FFB during the low season. These marked differences in production are linked to the dry spell experienced from November to February amongst other biophysical factors. Recent climatic changes have also distorted the smooth transition from dry to rainy season, in some cases leading to prolonged periods of drought. When the rain finally comes, it is occasionally intense and above field capacity, leading to leaching and runoffs. All of these variations have detrimental effects on subsequent yields. In order to reach optimal production of 20 to 25 tons FFB/ha/year with respect to prevailing West African conditions, the oil palm requires the following biophysical conditions: high temperatures all year round, between 25–28°C; sufficient sunshine, at least 5 hours of sun per day; high rainfall, evenly distributed between 1800–2400 mm/year without dry spells of more than 90 days; rich soil, but can also adapt to poor soils with adequate use of fertilizer; low altitude, ideally below 500 m asl. In Cameroon, three-quarters of the total oil palm plantation area is in the hands of the non-industrial palm oil sector, but this provides only 1/3 of the production due to very low yields (<1 ton CPO/ha/yr). This low yield is not only limited to palm oil producers as some agro-industries like CDC and Pamol cannot afford to produce up to 2 tons CPO/ha/yr. In contrast, in Indonesia smallholders reach much better yields (3–3.5 tons CPO/ha/yr) with guaranteed purchase ensured by agro-industries (Hoyle and Levang 2012). Cameroon has a huge domestic and sub-regional market for the sale of CPO, but despite this advantage, the country is a net importer of CPO with an estimated import of 50,000 tons in 2011and 80,000 tons in 2012 (E. Ngom, Minader, pers. comm.).

According to Ngando et al. (2011), 80% of Cameroonians consume red palm oil with an estimated 30% produced by artisanal mills. According to Carrère (2010), the advantages of these “oil palm smallholdings” could be numerous, since these holdings can guarantee growers a stable income, foster land tenure security and strengthen the monetarization of the rural areas, thus generating development. The present study seeks to carry out an evaluation

of the sector with special emphasis on its current strengths and weaknesses, and on ways to overcome / solve the problems.

3.3 METHODOLOGY

A preliminary survey of the oil palm production areas was carried out in 2011, while data collection from sampled respondents took place in 2011/2012.This preliminary survey led to the selection of four out of the seven major palm oil production basins: Eseka, Dibombari, Muyuka and Lobe / Mundemba. The location of the four selected palm oil production basins/zones is shown in figure 3, while figure 4 shows the suitability of the different regions in Cameroon to oil palm cultivation. It is interesting to note that during the FONADER-sponsored smallholder scheme, seven palm oil zones were carved out as production basins to supply FFB to major agro-industries within a 30 km radius of the nucleus mill. These zones included:

- Mondoni zone (Muyuka and its surroundings, smallholders in this zone were supposed to supply their FFB to the Mondoni CDC mill).
- Idenau zone (Limbe and its surroundings, smallholders in this zone were supposed to supply their FFB at the Idenau CDC mill).
- Mundemba zone (smallholders here were supposed to supply their FFB to the mill at Ndian Estate of Pamol).
- Lobe zone (smallholders here were supposed to supply their FFB to the mill at Lobe Estate of Pamol).
- Eseka zone (smallholders here were supposed to supply their FFB to SOCAPALM Eseka mill).
- Mbongo zone (smallholders here were supposed to supply their FFB to SOCAPALM Mbongo mill).
- Dibombari zone (smallholders here were supposed to supply their FFB to SOCAPALM mill located in Souza).

In our study, we selected four of the seven zones from the FONADER epoch. The four palm oil industrial mills considered in this study cover the two public companies (Pamol and CDC) and two mills of the SOCAPALM private group, which is for the time being the only private industry of the sector in Cameroon with productive plantations and mills.

Thus our sample covers the variety of situations of the industrial palm oil sector in Cameroon. The four studied zones are located in the Centre (Eseka), Littoral (Dibombari) and Southwest regions of Cameroon. These regions show the densest presence of oil palm, thus the sampling can be considered as representative of oil palm production in the littoral belt of Cameroon. In the second stage, we prepared a typology of the various palm oil producers.

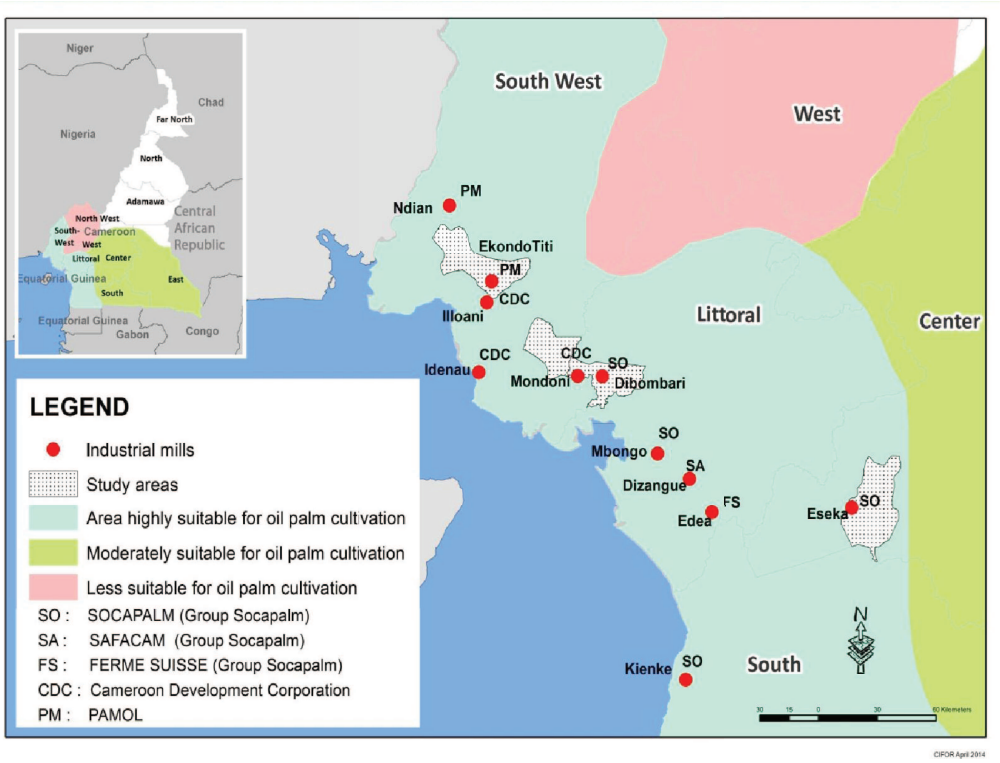

Figure 3: Location of study sites in Cameroon

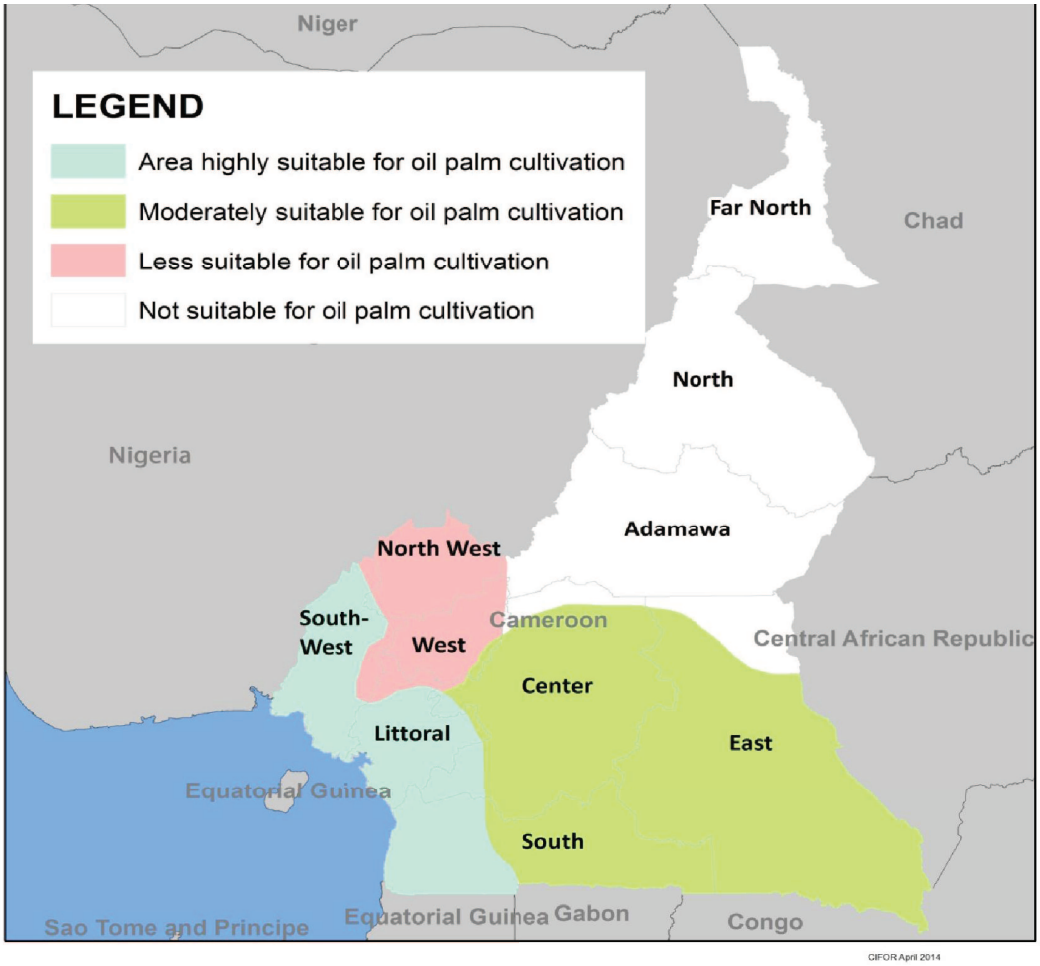

Figure 4: Agro-ecological suitability to oil palm cultivation

This categorization was necessary in order to provide an overview of the activities of the different palm oil producers. Income levels, social status, place of origin, past and present work with any of the oil palm agro-industries were the main criteria used to categorize the different palm oil producers:

- Villagers (or natives): This comprises the peasant population resident in their village or clan of origin with oil palm cultivation being a major source of their livelihood.
- Non-natives (or migrants): This comprises migrants from other parts of the country who are now settled in a locality that does not belong to their forefathers.
- Company workers (past and present): This comprises people who are presently working, or have previously worked in any of the aforementioned agro-industrial companies.
- Elites (internal and external): This comprises people of high social status in their village or clan of origin. They could be resident in the village and as such are called "internal elites" like the chiefs, notables or could otherwise be termed"external elites"

which implies they live outside ofthe village as is the case with civil servants, some businessmen, etc.

A checklist provided by the major agro-industrial companies helped in generating a stratified and randomized sample in each of the zones visited. This sampling method was necessary because the population of palm oil producers is heterogeneous and, as such, it was necessary to divide the population into subgroups. Once each subgroup was determined, a randomized sample was drawn independently. The collection of primary data was done with the use of individual semi-structured interviews, as well as semi-guided discussions. A total of 176 individual interviews were administered among four categories of producers, distributed as follows: 44 villagers (natives), 51 non-native (migrants), 40 company workers (past and present) and 41 elites. Secondary data were collected from CDC, Pamol and SOCAPALM, together with semi guided discussions with 45 company officials from the rank of supervisor to managerial staff, whether in active service or retired. Researchers in Pamol and La Dibamba (IRAD) research stations, officials of the smallholder oil palm department in the Ministry of Agriculture and Rural Development were also interviewed. A literature review was also conducted through internet search. The questionnaire administered to the different categories of palm oil producers was partitioned as follows:

- Identification of oil palm planter: name of producer, household rank, sex, age, ethnic group, marital status, educational level, occupation apart from oil palm cultivation.
- Farming details: previous land cover before oil palm cultivation, age of oil palm plantation, size of oil palm plantation, yield of FFB, peak, mid- peak and low-production period.
- Farm creation and management: land acquisition, procedure to get land title, the cost of establishing a hectare of oil palm plantation, origin, variety and cost of planting material, labor cost to manage oil palm plantation, cost to purchase inputs, weed control methods, major pests and diseases, cost and availability of working tools, origin of labor, stability of labor, registration of permanent labor to social security and whether the producer is a member of a common initiative group (GIC) or cooperative.
- Economic results: sale/processing of harvested FFB, net income of a hectare of oil palm plantation, sources of income for the household.
- Vision for the future: the palm oil producer's plantation, major problems that need urgent attention, proposals for the oil palm industry in Cameroon.

3.4 RESULTS

Eseka and Dibombari are located in the francophone part of Cameroon, with Eseka being a more“closed” agricultural zone controlled by the native Bassa people, while Dibombari shows a mixture of migrants from other parts of the country alongside the native Abbor people. Muyuka and Lobe/Mundemba zones are home to the Balung and Oroko’s natives with many immigrants from the Northwest. Dibombari and Muyuka have a good access to major markets, while Eseka and Lobe/Mundemba are more isolated.

3.4.1 Characteristics of palm oil producers

A total of 97.2% of the sampled palm oil producers were household heads, 2.8% were non-household heads, with 93.8% of males owning oil palm plantations and just 6.2% of females owning oil palm plantations, since women are limited by customary rights and lack of capital to own oil palm plantations. In terms of age distribution, <30 years records the lowest number of palm oil producers, while 60+ years records the highest number of palm oil producers, as shown in Figure 5. Figure 5 shows that very few people under 40 years (just 10.7%) own oil palm plantations in all the categories of sampled palm oil producers. The creation of an oil palm plantation is a huge investment, and below the age of 40, which is termed the “youthful stage,” most people who are not yet working or working without any meaningful financial reserve will not have the necessary income to invest in oil palm cultivation. Within the age range 60+, where the highest percentage of oil palm growers falls (41%), the dominant category of those who own oil palm plantations are former company workers, most of whom have retired. Due to their long-standing relationship with the company, they were able to acquire better quality planting material and inputs at better prices, and had technical expertise, compared to the other categories of palm oil producers. The income from the cultivation of oil palm is all year round and significantly improves household livelihood, especially at a time when the planters’ benefits from their retirement are insignificant and they are no longer physically fit to embark on other income-generating activities.

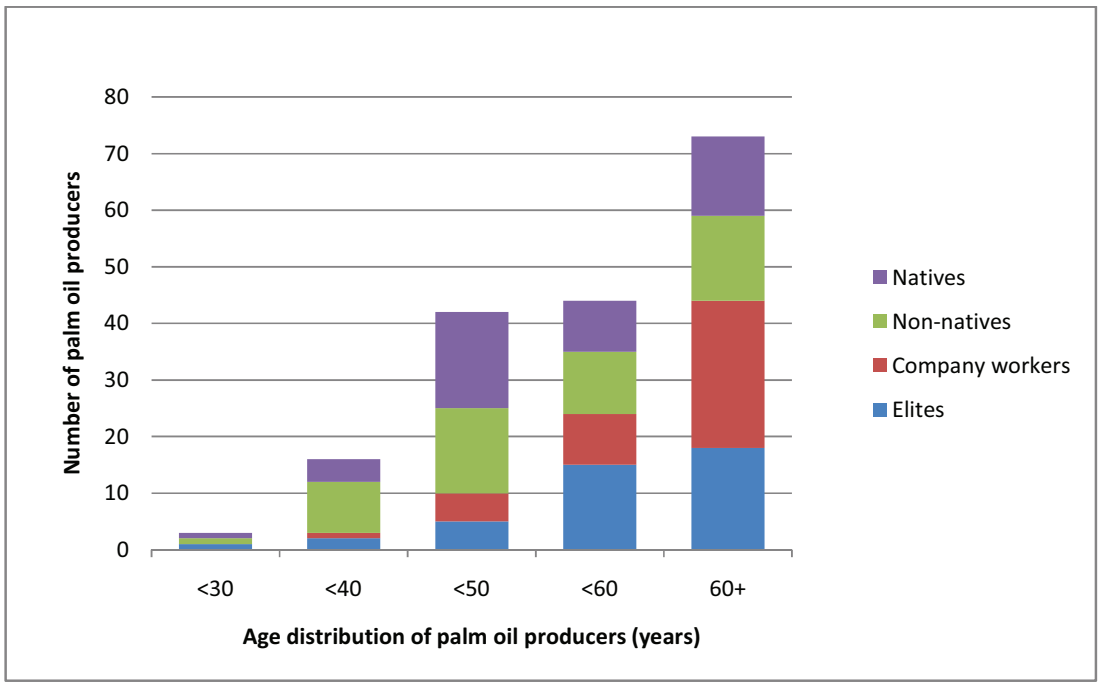

Figure 5: Age distribution of different types of palm oil producers.

As concerns educational level, 52.2% of respondents were primary school leavers, 9% were secondary school, 15.7% were high school and 23.1% held university grades. The distribution of educational level per type of smallholder is shown in Figure 6. Figure 6 shows that primary school leavers were largely natives who had never had the opportunity to pursue their education at a post-primary level, and most of whom rely on agriculture and oil palm cultivation in particular for their livelihood. The elites, followed by non-natives or migrants, dominate the level of university graduates. These elites, because of their educational level, occupy top administrative positions in both the public and private sectors in the country. This gives them a better bargaining power in negotiation for land to cultivate oil palm, especially in their region of origin.

3.4.2 Sources of income of palm oil producers

The main occupation of these palm oil producers were as follows:

- Farming: 45.5% (rely solely on farming through the cultivation of food and cash crops as well as animal husbandry for their livelihood).
- Salaried worker: 19.7% (apart from growing oil palm, they work in either the public and private sectors of the state).

- Retired worker: 21.3% (apart from growing oil palm, they were former workers in either the public or private sectors, but are now retired).
- Trade: 7.3% (apart from growing oil palm, they also do business).
- Others: 6.2% (apart from growing oil palm, they also perform other off-farm activities, different from those mentioned above).

The major source of income for 72% of the respondents came from the cultivation of oil palm, 7.3% got their major source of income from their salaries (off-farm activity), 3.9% attributed their major source of income to cultivation of food crops and 2.8% attributed their major source of income to retirement benefit. The remainders were indifferent to where their major source of income came from. It is worth noting that these producers have various sources of income and different main professions, from peasant farmers, to taxi drivers, teachers, business professionals, civil servants, up to ministers.

3.4.3 Differentiated access to land

The elites recorded the highest average areas cultivated with oil palm per household (41.3 ha). This was closely followed by the company workers (24.8 ha), the non-natives (20.7 ha) and lastly the villagers (8.7 ha). Concerning the availability of reserve land for future development, the elites still recorded the highest average area per household (15.1 ha), and were closely followed by the villagers (12.1 ha) as shown in Table 7. Most elites and natives are entitled to customary land rights in their areas of origin but, in contrast to the natives, most of these elites have the capital required to develop their oil palm plantation and to purchase more land for future expansion.

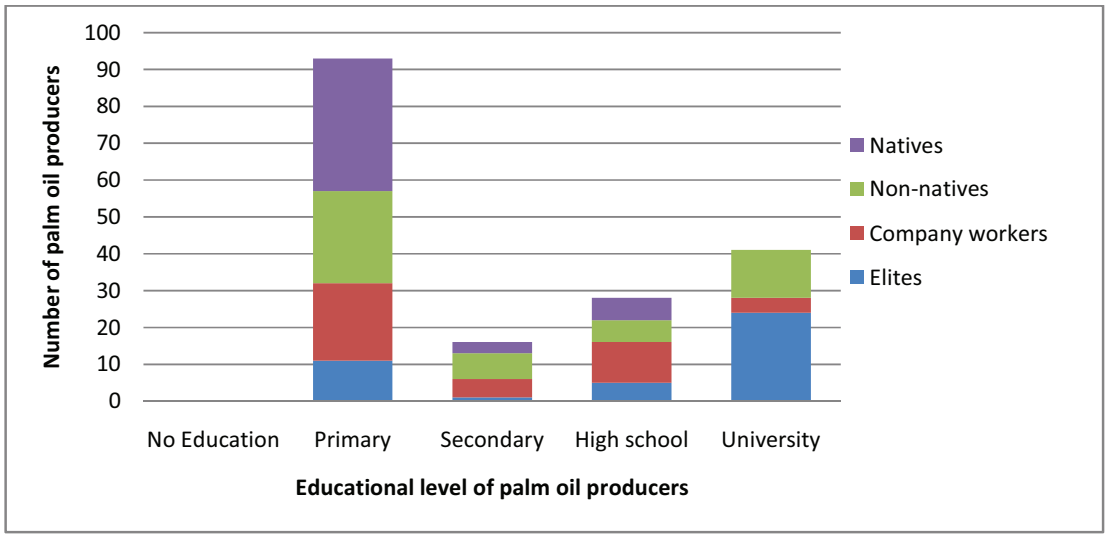

Figure 6: Educational level of different types of palm oil producers.

The percentage distribution of immature, mature and old palms was 11.9%, 40.1% and 43.7%, respectively. In the sample, 68% of the respondents bought land for the cultivation of oil palm, 33.1% received land through inheritance and 2.2% got land through donation. Figure 7 shows the distribution of the areas cultivated by different categories of palm oil producers, with some elites having more than 300 ha of oil palm plantations. These elites, though few in number in comparison to their peasant counterparts (natives orvillagers), often own very large areas (average in the sample: 41.3 ha/household for elites). According to a recent census of palm oil producers by Minader, 10% of the producers were elites owning 65% of the total plantation area (*Ngom, pers. comm*.).

3.4.4 Reduced conversion of primary forest

Before an oil palm plantation is established, the original vegetation of that area must be removed. Previous land cover thus refers to the original vegetation cover that existed before the land was converted into oil palm cultivation. The previous land cover before conversion to oil palm cultivation was as follows:

- Primary forest: 3.9% (untouched or logged forest never cleared for agricultural purposes to the knowledge of the farmer).
- Secondary forest: 66.9% (secondary regrowth forest of various ages after agricultural use). The dominance of secondary forest in terms of cultivated surface areas is an indication that most areas planted with oil palm were previously used for shifting cultivation.
- Former plantation land: 17.4% (this includes areas that were formerly used for the cultivation of other perennial crops like coffee, cocoa, rubber, etc.).
- Former food-crop land: 19.1% (this includes areas that were formerly used for the cultivation of annual food crops).

Table 7 : Average areas (ha) per household per category of palm oil producers.

	Average oil palm plantation surface area (ha/household)					
	Young palms	Mature palms	Old palms	**Total palms**	Undeveloped land	**Total land Ownership**
Elite	6.8	21.1	13.4	**41.3**	15.1	**56.4**
Company worker	1.4	5.4	18.0	**24.8**	6.7	**31.5**
Non-native	2.0	10.1	8.6	**20.7**	3.9	**24.6**
Native	1.7	3.5	3.7	**8.7**	12.5	**21.2**

Source: 2011 field survey

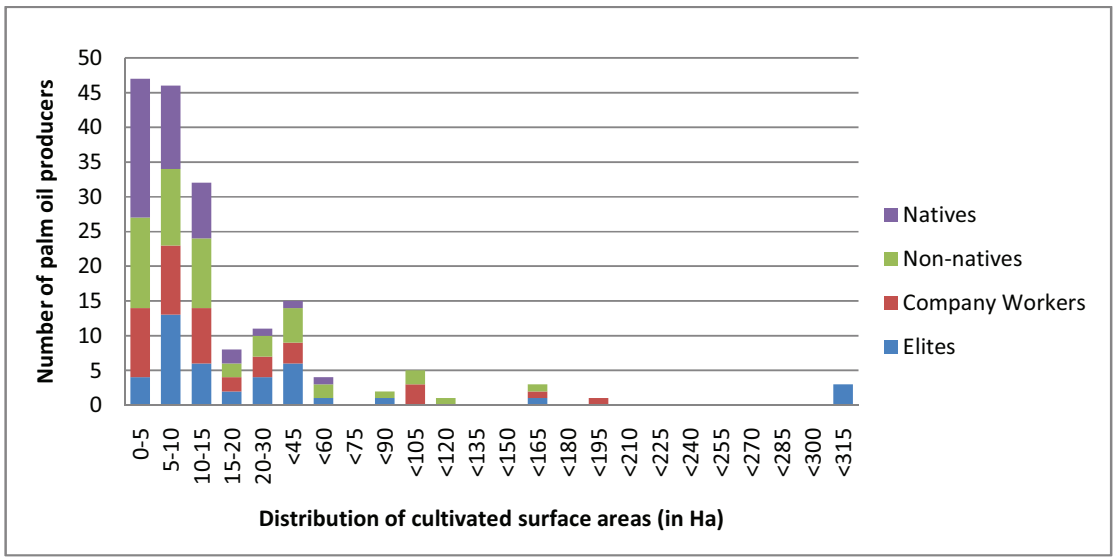

Figure 7: Distribution of areas for different types of palm oil producers.

The price for a hectare of farm land in the major oil palm production basins ranged from 200,000 to 400,000 FCFA/ha (305 to 610 €/ha) in Mundemba/Lobe, 335,000 to 500,000 FCFA/ha (511 to 762 € /ha) in Dibombari ,350,000 to 550,000 FCFA/ha (534 to 838 €/ha) in Eseka and 750,000 to 2,200,000 FCFA/ha (1,143 to 3,354 €/ha) in Muyuka. The respondents further explained that many "bottlenecks" are involved in the attribution of a land title to a piece of land by the government.

Concerning the origin of capital for the cultivation of oil palm, 83.6% of the respondents got their capital through personal savings, 28.8% through bankloans, 4% through cooperatives and 3.4% through government grants.

3.4.5 Management of an oil palm plantation

Apart from the cost incurred to purchase a piece of land, the smallholder needs between 850,000 to 1,137,000 FCFA (1,295 to1,733 €) to establish and maintain a hectare of oil palm plantation during the first 4 years before the plantation finally enters into production. Some producers, in a move to ensure the quality of planting material and to reduce production costs, create their own nursery after the purchase of certified chitted seeds from research stations. The nursery site must not become water logged and should be close to a fast-flowing and deep stream for irrigation. The nursery type could either be a single or double-stage nursery, with a fence to prevent the encroachment of rodents. With a single-stage nursery, chitted seeds are sowed in large polyethylene bags and cared for until maturity in direct sunlight, while a

double stage nursery involves the sowing of chitted seeds in small polyethylene bags usually placed in shade and, after 3–4 months, the seedlings are transferred to larger polyethylene bags and then allowed to acclimatize in direct sunlight. Nursery operations include filling of polyethylene bags with soil, sowing seeds, daily watering, weeding, monitoring of pests and diseases, rogueing (removal and discarding of diseased and genetically abnormal seedlings in the nursery), application of inputs (fertilizers, insecticides and fungicides), etc.

Field operations performed during the establishment phase include: forest under-brushing, felling and burning, lining and holing, purchase of oil palm seedlings, transportation of seedlings to planting site, planting, and protection of plants from rodents with the use of either wire mesh, bamboo, or used milk containers. Burning is generally used because it reduces the cost of field establishment and helps to reduce the population of *Oryctes* beetles during replanting (Jacquemard 2012). Burning helps to mineralize the mass of important leaf litter in a few hours; this is an important source of organic matter for the palms. At the global scale, burning releases carbon into the atmosphere with detrimental effects on climate change. Field maintenance includes: strip slashing and the eradication of harmful weeds, ring weeding, purchase and application of inputs (fertilizer, fungicide, insecticide, herbicide), ablation of early bunches to foster vegetative growth, harvesting and pruning, collection, and transportation of FFB, as shown in Table 8. Only 35% of the respondents claimed to have used certified planting material directly or indirectly from either of the two main research institutions responsible for the production of certified oil palm seeds in the country (Pamol Research Department and and IRAD Dibamba). The major agro-industries, as well as intermediaries who buy chitted tenera varieties, raise their plants in nurseries and, at maturity, sell to those in need (seedlings are of doubtful origin and quality). The remaining 65% had a mixture of both tenera from either the research department in Pamol or IRAD Dibamba, mature seedlings from agro-industries, as well as from intermediaries, and seedlings from their own oil palm plantation. It was difficult to estimate the fraction of land covered by the tenera and native oil palm variety, but what is important is that most palm oil producers were progressively felling the native palms and replacing them with the quality variety. The cost of chitted nuts in the research stations stood at between 200 to 295 FCFA/seed (0.3 to 0.45 €/seed), while a fully grown oil palm seedling sold at between 1500 to 2,850 FCFA (2.29 to4.34 €) depending on the age of the seedling in the nursery. The seeds produced in the various research stations were also of different types: normal seeds and *Fusarium*-wilt tolerant seeds. Fusarium wilt tolerant seeds are more expensive than the normal seeds (at the Pamol research unit in Lobe it is sold at 250 FCFA (0.38 €) / seed, while at La Dibamba

research center, it is sold at 295 FCFA (0.45 €) /seed). Of the sampled palm oil producers, 68% of respondents could not afford to apply fertilizers on their farms, 30.9% applied fertilizer irregularly and only 1.1% regularly fertilized their land. With respect to the different types of palm oil producers, only 4% of elites used regular fertilization, where as none of the other oil palm producers fertilized their land regularly, as shown in Table 9.

Table 8 : Field operational costs for the establishment and upkeep of a hectare of oil palm plantation in FCFA (Euros).

Operations	Timing	Frequency /year	Operational cost Year 0	Operational cost Year 1 and 2	Operational cost Year 3	Operational cost Year 4
Forest under-brushing/slashing	Nov to Dec	3 times / year for young palms	35,000 (53.36)	85,000 (129.58)	60,000 (91.47)	60,000 (91.47)
Felling and burning	Dec to Feb		50,000 (76.22)	0	0	0
Acquisition of selected seedlings	Mar to April		250,000 (381.12)	0	0	0
Acquisition of wire mesh	Mar to April		40,000 (60.98)	0	0	0
Various transportation	Mar to April		20,000 (30.49)	0	0	0
Pre-lining, lining and digging	Mar to April		30,000 (45.73)	0	0	0
Planting of seedlings protection with wire mesh	April to May		20,000 (30.49)	15,000 (22.87)	0	0
Fertilizer purchase and application	April- May & Sept-Oct	Twice a year	18,000 (27.44)	25,000 (38.11)	40,000 (60.98)	40,000 (60.98)
Circle weeding	Apr- May & Sept-Oct	Twice a year	0	30,000 (45.73)	21,000 (32.01)	30,000 (45.73)
Harvesting and transportation of bunches	All year round	Twice a month	0	0	60,000 (91.47)	80,000 (121.96)
Total			**463,000 (705.83)**	**155,000 (236.3)**	**181,000 (275.93)**	**210,000 (320.14)**

Source: 2012 fieldwork

Farmers attribute this low rate of fertilizer application to the high cost of fertilizer presently sold in the local market. Fertilizer that used to cost 3,000 to 4,000 FCFA/50 kg (4.57 to 6.10 €)/50 kg during the first oil palm development plan in the late 1970s has risen to 15,000 to 28,000 FCFA (22.87 to 42.69 €) / 50kg depending on the brand of fertilizer. Apart from fertilizer, the cost of other inputs like insecticides, fungicides and herbicides has also increased tremendously. Although there are plans to open a fertilizer factory (Ngah, 2011), the government has to import fertilizer and other agricultural inputs from other countries, and currently no longer subsidizes the purchase of these agricultural inputs. The control of weeds

represents another cost for the planters during the pre- and early-production period of the plantation. Control measures often need to be intensified at least three times a year, especially when the palms are still young, otherwise the juvenile palms may be ravaged by rodents. As the palms mature, the weeding frequency can be reduced to twice a year. With respect to the sampled palm oil producers, 99.4% control weeds manually at the pre-production stage of their oil palm plantation, 65.7% through intercropping with other food crops and 19.7% through the use of herbicide. Farmers did not stick to a single weed control method and often adopted all three strategies. At early production, 100% of the sampled farmers manually controlled weeds, while 51.7% were able to occasionally use herbicides. Most often, the use of these herbicides was limited to the eradication of harmful weeds and ring weeding, and palm oil producers mostly used contact herbicides when their oil palm plantations were still young and systemic herbicides as soon as the oil palms were mature.

Table 9 : Fertilizer application by different types of palm oil producers.

Type of palm oil producers	Regularity in fertilizer application (% respondents)			Total
	Regular application	Irregular application	No application	
Elites (n = 41)	4.0	42.7	53.3	100
Company workers (n = 40)	0.0	29.1	70.9	100
Non-natives (Migrants) (n = 51)	0.0	24.5	75.5	100
Natives (n = 44)	0.0	27.6	72.4	100
Total (in %) (n = 176)	**1.1**	**30.9**	**68.0**	**100**

Source: 2012 fieldwork

Major pests and diseases identified in the nursery included *Cercospora* leaf spot, anthracnose and blast, all of fungal origin. Blast is a fungal disease transmitted by the insect vector *Recillia mica*, which can ravage about 85% of the nursery seedlings if appropriate control measures (cultural practices and the use of fungicides) are not put in place. Major pests and diseases affecting field palms include *Fusarium* wilt caused by *Fusarium oxysporium*, *Ganoderma* bud rot which tends to affect palms over 15 years of age, and the leaf miner (*Coelaenomenodera minuta* uh.), which bores into the mesophyl layer of the leaf thus reducing its photosynthetic ability and invariably leads to low yields. Rodents can also be very harmful especially for juvenile seedlings during the pre-production stage if appropriate control measures are not put in place. Of the sampled palm oil producers, 46.6% of the farmers reported the incidence and severity of pests and diseases in their oil palm plantation to

be insignificant, 49.4% reported the incidence and severity to be moderate and 2.8% reported the incidence and severity to be high. Some pests and diseases are endemic to specific oil palm production basins. According to Etta, Senior Research and Development Officer, Pamol Lobe (*pers. comm.*), *Ganoderma* bud rot is endemic to part of the Muyuka palm oil production basin of Ekona town. There is an obvious lack of information on the impact of pests and diseases on the production, most of the respondents considered the effect of pests and diseases to be insignificant, whereas field observations in Mungo palm estate located in Muyuka town showed that some plots were heavily infested with *Ganoderma* resulting in the death of palms, though no estimate was recorded. According to Forwang, former Estate Manager of Mungo palms (*pers. comm.*), apart from the irregular application of fertilizer, which is due to the high cost, the Mungo palm estate is facing serious problems with pests and diseases, with *Ganoderma* being the most significant. Farmers responded positively on the availability of some rudimentary working tools like cutlasses, spades, diggers and wheelbarrows in the local market but decry the sharp increase in price as compared to previous years. Quality pruning and harvesting knives (Malaysian knives) with poles were scarce in the local market, and the locally fabricated knives are expensive and not durable, most farmers complained. These locally fabricated knives were sold between 25,000 to 30,000 FCFA (38.11 to 45.73 €) and, together with the pole, could amount to about 80,000 to 100,000 FCFA (121.96 to 152.45 €). This has forced some farmers to resort to the use of bamboo poles, which are not convenient for very tall palms.

Oil palm planters mostly practice intercropping at the pre-production stage, with the palms regaining their monospecific status at production stage. The shading effect of the fronds of the oil palm trees does not allow intercropping at the production stage. The choice of quality of planting material, inputs and management practices depends on knowledge, level of information and income status of the different palm oil producers. Care is required in the choice of crops to intercrop with oil palm and the spatial and temporal patterns to be used. The cropping system adopted at the immature stage by the majority of the palm oil producers also differs from that of agro-industries which is essentially monocropping. Agro-industries generally use certified seedlings and do not intercrop at the pre-production stage, instead seeds of leguminous cover crops (*Centrosema*, *Mucuna,* etc.) are broadcast during field establishment. These leguminous cover crops fix atmospheric nitrogen and prevent weeds becoming established in the plantation. The agro-industries apply recommended rates of fertilizer, at least at the pre-production stage of the plantation, based on standard recommended doses for the area. The yields of the palm oil producers range from 3 to11 tons

FFB per hectare per year as the palms enter maturity. The yield range above can be calculated according to the age of the palm, an estimate of the number of bunches harvested each month during the peak- and low-production season, as well as the average bunch weight. Palm oil producers naturally do not keep farm records and thus their yield is mostly based on estimates. The average yield recorded from the field survey for the different types of palm oil producers was as follows:

- Elites: 8.4 t FFB/ha/yr.
- Current/former company workers: 8.1 t FFB/ha/yr.
- Non-native (migrants): 7.3 t FFB/ha/yr.
- Native (villager): 7.0 t FFB/ha/yr.

Elites and company workers registered slightly better yields of 8.4 t and 8.1 t, respectively, compared to migrants and natives, which could be due to access to quality planting materials and better management of the plantation. But the yield difference per type of palm oil producer was not great, probably because of the absence of regular fertilization.

3.4.6 Labor

Regarding labor, 24.2% of the farmers used family labor, 29.8% hired native workers, and 94.4% hired migrant workers from other parts of the country. The total exceeds 100% as many planters used more than one type of laborer. The Northwest followed by the Northern regions of the country supply most of the migrant workers found in the non-industrial palm oil sector in the country, while 3.4% hired foreigners, mostly Nigerians. Nigerians were mostly found in the Southwest region of the country, since this region shares a long border with the Federal Republic of Nigeria. Family labor (which comprises the smallholder, the wife, the children and extended family) is mostly used when the size of the farm is relatively small (0–5 ha) to perform almost all farm operations except for the most sensitive, such as harvesting and pruning, which need experienced hired labor if the expertise is not available in the family. As the farm gets bigger, the producer recruits a permanent workforce. Temporary workers are hired occasionally, when the workload on the farm is excessive, to perform specific operations, especially during the peak-production season. Permanent labor is recruited based on aptitude and physical fitness to perform daily operations under the supervision of the grower or farm manager; payment is at the end of each month, with variation in salaries depending on the operations performed. The family may still be there to assist the planter in performing operations like ring weeding, slashing, collecting loose fruits, applying inputs like herbicide and fertilizer, as well as supervision. Labor poses a serious problem in both the non-

industrial and the agro-industrial oil palm sector as regular recruitment has to be carried out constantly in order to keep the labor force especially if the plantation is located in a very isolated locality.This is partly because the active populations of the plantation locations are not interested in working on these plantations and prefer to move to cities in search of better jobs, or they prefer to carry out other activities in their village. This has led to migration of the labor force, especially from the Northwest and Northern regions of the country to the Southern forest zones where oil palm is cultivated. In the absence of mechanization, most of the operations are performed through the use of manual labor. These operations are tedious and some require a degree of aptitude; most palm oil producers complain about the shortage of labor on their plantations.With regards to stability of work force, 90.4% of oil palm growers had a non-permanent work force and 9.6% had a permanent work force. Only 1.1% of these permanent work force were enrolled at the National Social Insurance Fund (CNPS) to benefit from social security at retirement. The absence of social security and fluctuation in farm operational costs from one"smallholder" oil palm plantation to the other has resulted in the high mobility of workers amongst these plantations, in the sense that these workers are always ready to move from one farm to the other in quest for a better pay and quicker payment. This is observed amongst both the native and non-native categories of workers. A total of 41.6% of the sampled palm oil producers were registered members of a cooperative or common initiative group (CIG), but the bargaining power of most of these groups for quality planting material, inputs like fertilizer and pesticides, as well as the ability to obtain loans from financial institutions was not felt by most of the sampled palm oil producers.

3.4.7 Economic results

In the sample, only 25.6% of the planters sold their fresh fruit bunches (FFB) exclusively to an industrial mill; 27.3% either sold their FFB to industrial mills or to artisanal mills depending on the season and quantity harvested; 47.1% exclusively processed their FFB at artisanal mills (personally owned or not). Given that the current price of FFB sold to agro-industries is maintained at 42,000 to 50,000 FCFA (64.03 to 76.22) €, the quantity sold to industrial mills will largely depend on the size of the plantation, the distance to the industrial mill and the season of production. The number of artisanal mills, both manual and motorized has increased in recent years, leading to high competition with the industrial mills in the processing of FFB. Despite their low extraction rate (13-15%) compared to that of the nucleus mill (21 to 25%) (Cheyns and Rafflegeau 2005; Ngom 2011), they are a force to reckon with in terms of the value added to the FFB and the additional income to the smallholder. For

example, a ton of FFB sold for 48,000 FCFA (73.18 €) to SOCAPALM, 42,000 FCFA (64.03 €) to Pamol and 50,000 FCFA (76.22 €) to CDC could be processed by a smallholder in an artisanal mill to yield between 150–200 L of CPO. The retail price of CPO ranges from 500 to 800 FCFA (0.76 to 1.22) €/L during peak and low season respectively, in the Muyuka zone. A woman (intermediary) can incur 79,500 FCFA (121.2 €) total expenditure (FFB purchase, transportation, labor and milling charge) for a ton of processed FFB during the low production season and mills 150 L. If she happens to retail during this period at 800 FCFA (1.22 €)/L, she is able to make a 120,000 FCFA (182.94 €) gross revenue, or a net profit of 40,500 FCFA (61.74€) from the purchase of a ton of FFB. Meanwhile, the oil palm grower who also performs the same activity in an artisanal mill will earn a lot more profit 45,500 to 95,500 FCFA (69.36to 145.59 €) / ton FFB than one who decides to sell his FFB to any of the aforementioned companies, as shown in Table10.

Table 10 : The variable cost incurred for the artisanal processing of a ton of oil palm FFB.

Operations		**Cost at peak season in FCFA (€)/ t FFB**	**Cost at low season in FCFA (€)/t FFB**
FFB purchase		40,000 (61 €)/t	50,000 (76 €)/t
Transportation		7,000 to 12,000 (11 to 18.1€)/t	7,000 to 12,000 (11 to 18.1€)/t
Labor charge		1,500x 5 drums =7,500 (11.5€)/t	1,500 x 5 drums = 7,500 (11.5 €)/t
Milling charge		2,000 x 5 drums = 10,000 (15.2€)/t	2,000 x 5 drums = 10,000 (15.2 €)/t
Total expenditure		64,500 to 69,500 (98.2 to 106) €/t	74,500 to79,500 (114 to121.2) €/t
Price of palm oil/Liter		500 (0.76 €)/L red oil	800 (1.22 €)/L red oil
Gross revenue		75,000 (114.4 €)/t FFB	120,000 (183 €)/t FFB
Net profit	Intermediary	5,500 to 10,500 (8.4 to 16.0) €/t FFB	40,500 to 45,500 (61.7 to 69.4) €/t FFB
	Palm oil producer	45,500 to 50,500 (69.4 to 77) €/t FFB	90,500 to 95,500 (138 to 146) €/t FFB

Source: 2012 fieldwork

This explains why most palm oil producers prefer to process their FFB in an artisanal mill especially during the low-production season. Most FFB processors do not sell their CPO when prices drop, they prefer to keep it and sell when market prices are good. The long shelf life (the period before the oil gets rancid) of 6 months or more, due to the fact that it is solid at room temperature, facilitates this long storage provided the quality of the palm oil is good.

The shelf life for palm oil is reduced when it contains moisture, dirts and more than 3% free fatty acids.

Table 11 : Revenue derived from the sale of FFB and red palm oil in thousand FCFA (Euros).

Year	Estimated yield (t/ha/yr)	Field manag't Cost	Revenue (FFB Sale)	Cumul-ative (R-E)	Field manag't + PC	Revenue (oil sale)	Cumul-ative (R-E)
0	0	463 (705.84)	0	-463 (-705.84)	463 (705.84)	0	-463 (-705.84)
1	0	155 (236.30)	0	-618 (-942.14)	155 (236.30)	0	-618 (-942.14)
2	0	155 (236.30)	0	-773 (-1178.43)	155 (236.30)	0	-773 (-1178.43)
3	0	181 (275.93)	0	-954 (-1454.37)	181 (275.93)	0	-954 (-1454.37)
4	4	210 (320.14)	192 (292.70)	-972 (-1481.81)	328 (500.03)	382 (582.36)	-900 (-1372.04)
5	6	240 (365.88)	288 (439.05)	-924 (-1408.63)	417 (635.71)	573 (873.53)	-744 (-1134.22)
6	8	260 (396.37)	384 (585.41)	-800 (-1219.59)	496 (756.15)	764 (1164.71)	-476 (-725.66)
7	9	270 (411.61)	432 (658.58)	-676 (-1030.56)	535.5 (816.37)	859.5 (1310.30)	-152 (-231.72)
8	10	280 (426.86)	480 (731.76)	-476 (-725.66)	575 (876.58)	955 (1455.89)	228 (347.58)
9	10	280 (426.86)	480 (731.76)	-276 (-420.76)	575 (876.58)	955 (1455.89)	608 (926.89)
10	10	280 (426.86)	480 (731.76)	-76 (-115.86)	575 (876.58)	955 (1455.89)	988 (1506.20)
11	10	280 (426.86)	480 (731.76)	124 (189.04)	575 (876.58)	955 (1455.89)	1,368 (2085.51)
12	10	280 (426.86)	480 (731.76)	324 (493.94)	575 (876.58)	955 (1455.89)	1,748 (2664.81)
13	10	280 (426.86)	480 (731.76)	524 (798.83)	575 (876.58)	955 (1455.89)	2,128 (3244.12)
14	10	280 (426.86)	480 (731.76)	724 (1103.73)	575 (876.58)	955 (1455.89)	2,508 (3823.43)
15	10	280 (426.86)	480 (731.76)	924 (1408.63)	575 (876.58)	955 (1455.89)	2,888 (4402.73)

Price per ton FFB sold to Agro-industry = 48,000 FCFA (73.18 €) ; processing cost (PC)/ton FFB =29,500 FCFA (44.97 €).

Table 11 shows that palm oil producers who harvest their FFB and process it in an artisanal mill are able to register a net positive revenue in the 8th year after deducting all costs and also make a higher income, while their counterparts who supply their FFB to the nucleus mill are

able to register a net positive revenue in the 11th year after deducting all costs incurred, and have a comparatively lower income.

3.4.8 Future plans for palm oil producers

At an individual level, some palm oil producers see the need to carry out further expansion of their farms, the replanting of old palms of age >25–30 years, as well as the eradication and replacement of the local breed (pisifera and dura varieties). Some also see the need to equip their plantation with an automated mill and to purchase a vehicle/tractor, mainly for the purpose of transportation. They also enumerate problems like the bad state of farm to market roads especially during the peak production season, which partly falls during the rainy season, the high cost of inputs, high cost of planting material, fluctuation in the market price for FFB and CPO, high cost of labor, and absence of subsidy from the state. Most farmers sampled had mixed feelings about the future of the non-industrial oil palm sector but were optimistic that if they could work in synergy with the State and agro-industrial companies in order to ameliorate some of their present difficulties, then the "smallholder" oil palm sector could be a potential force to reckon with in terms of income generation through direct and indirect employment and poverty alleviation, especially in rural settings.

3.5 DISCUSSION

3.5.1 Strengths and weaknesses of the sector

Agriculture forms the backbone of Cameroon's economy, and 70% of the population depends on agriculture and pastoral activities for their livelihood (World Bank, 2012). The non-industrial palm oil sector creates direct and indirect job opportunities and generates income for people of all age groups and social status, thus participating in poverty alleviation.

Most palm oil producers have the basic knowledge to establish an oil palm plantation, regardless of their level of education, though to some extent they still need to seek the advice of agricultural experts. What usually poses a problem is the financial capital needed to invest in oil palm cultivation, as very few palm oil producers are able to afford such a huge amount 850,000 to 1,137,00 FCFA (1,295.82 to 1,733.35 €)/ha, excluding the price for the purchase of a hectare of land. In addition to this, very few institutions are willing to lend money at very low interest rates to palm oil producers allowing a grace period of 3–4 years for the palms to enter production (Bakoumé et al., 2002; Rafflegeau, 2008). The absence of a farmers' bank (specialized in agricultural investment) to lend money to palm oil producers is a major

problem, though the Head of State recently promised the creation of a bank that will cater for the needs of the farmers (Ngah, 2011). According to Dimelu and Anyaiwe (2011) the bulk capital utilized by palm oil producers comes from personal savings or informal sources, and this capital is grossly inadequate for improved and sustained production. International and domestic banks provide large loans to estate plantations, but do not target oil palm growers. The lack of an appropriate policy by the government also reveals the stagnation in the sector's production. The aging population in the sector is a concern. Oil palm should be made more attractive to the youth through provision of land, incentives and the formulation of better policies that will help to reduce rural exodus. Fonjong (2004) argues that the fight against poverty and the drive towards food sufficiency by the State remains a fallacy given the collapsing state of agro-pastoral infrastructure in the country. The cropping system adopted by most palm oil producers, which involves the intercropping of oil palm together with some food and cash crops during the initial stages of the plantations helps to minimize environmental change induced by the artificial monospecific system, prevents soil erosion, optimizes the utilization of different soil nutrients and enhances food security (Tonye et al., 2004; Bakoumé 2006). But this intercropping does not last long as the farm finally recovers its monospecific status at production stage. Worse still, if a better intercropping method is not implemented (that considers the crops to intercrop with oil palm, temporal and spatial design in planting, as well as best management practices), this will have a negative effect on the yield of oil palm at the production stage.

The sector benefits from the presence of a domestic and sub-regional market, though with some fluctuations in the market price for palm oil depending on the season of production. In contrast to the price of CPO from agro-industries which is regulated by the government at 450 FCFA (0.69 €)/kg, tax exclusive and the distribution to downstream industries, no regulation is put on CPO from the non-industrial palm oil sector and this is of advantage to the oil palm grower because during low-production season, the price can increase to 800 to 1,300 FCFA (1.22 and even 1.98 €) /L, while at peak production season, the price can fall to 500 FCFA (0.76 €). The choice of the time of sale and customer is important for the oil palm grower. According to Bakoumé (2006), palm oil producers need assistance from the State and have to organize themselves into active groups/cooperatives to overcome many constraints (lack of access to capital, quality planting material, inputs, transportation difficulties, etc.) that limit oil palm profitability, and thus their contribution to increasing national production. At present, the country does not have a fertilizer manufacturing plant, thus there is heavy reliance on imports. Most planters record very low yields in their plantations. Lebailly and Tentchou

(2009) and Ngom (2011) reported low yields in the smallholder oil palm sector. Rafflegeau et al. (2010) propose a range of 2–14 t/ha/y as the yield for the non-industrial palm oil sector depending on the age and management methods. The low yield is also partly attributed to the 4 months of drought experienced in the course of the year (Ngoko et al., 2004). Hirsch (1995), Donough et al. (2009) and Jannot (2010) reiterate the need for better management practices (crop recovery, quality planting material, fertilizer application, ground cover, water management, pest and disease control, canopy management, general management) and the use of ”already cleared land” as ways to improve yield and avoiding further encroachment into the forest. Durand-Gasselin et al. (2010) advise plant breeders to focus on yield improvement, improvement to the life cycle of the plantation and selection for resistance to diseases as factors that will improve the sustainability of the crop. Caliman et al. (1994) stress the need for precise, accurate and reliable laboratory analysis of foliar samples as a prerequisite for better fertilizer use. That notwithstanding, palm oil producers can still realize better profit margins especially when value is added to their FFB. Fournier et al. (2000) show that artisanal milling of FFB is one of the most profitable activities for Beninese women. According to Feintrenie (2012), the artisanal transformation of FFB also provides an opportunity of income for widows and single women, who have poor access to land. Previous studies by Etta et al. (2007) focused on yield improvement through the utilization of empty fruit bunches (EFB) as a source of organic manure, supplemented with reduced rates of inorganic fertilizer for field palms, which resulted in significant yield improvement for as low as 30 tons of EFB applied to lateritic sandy soils. However, limitations came from the quantity of EFB that is produced per ton of FFB with 22–25% EFB/ton of FFB (Rosenaniet al., 1996), as well as logistics and transportation difficulties that may arise depending on the distance of the plantation from the mill.The relationship between palm oil producers and the agro-industries has changed since the first oil palm development plan in the late 1970s. Today, because of the advent of artisanal mills and the profit margin obtained from adding value to the crop, very few oil palm planters are dependent on the agro-industries, coupled with the fact that these companies offer very little assistance to these oil palm planters. This is supported by Hirsch (2000), who showed that oil palm growers prefer to process part or all of their FFB in order to make more profit. Under fair partnerships between oil palm growers and companies, oil palm could be of more benefit to planters (Feintrenieet al., 2010; Skurtis et al., 2010). Carrère (2010) acknowledges the non-industrial palm oil sector as a potential source of income, employment and development especially in rural areas.

Some palm oil producers have customary claims to land, and there is land available that is suitable for the cultivation of the crop. In recent years, with the increase in pressure on arable land suitable for oil palm cultivation, land prices have steadily increased, thus forcing people to go further into the forest where they can get cheaper land. At present, the non-industrial palm oil sector is thought to pose little threat to the primary forest, but still very little regulation has been put in place by the government to mitigate the effect that "smallholder" oil palm development might have on the environment. A majority of their holdings are located in areas that were formerly occupied by secondary forest, in contrast to agro-industries, which usually acquire huge expanses of land, mostly primary forest, for oil palm cultivation.

3.5.2 Learning from other countries

The FONADER scheme is very similar to the nucleus estate and smallholders scheme (NES) developed in Southeast Asia and more specifically in Indonesia. The same criticisms are made on the bad treatment reserved to migrant workers living in the estates or working for sub-contracted companies, and on the smallholders in partnerships who are often considered as captive producers assuming all the risks related to agricultural production (Elong, 2003; Carrère,2010; Feintrenie et al., 2010). In Indonesia, there is no traditional knowledge of artisanal palm oil production, thus oil palm growers are dependent on industrial mills to buy and process their FFB, which makes the main difference with Cameroon (Feintrenie, 2012a). In the regions where several palm oil industrial mills are present, FFB producers and middlemen can negotiate FFB price at mill gate, benefiting from the competition among mills. On the opposite, in regions where one oil palm company has a monopoly for buying FFB, the price is decided by the mill, even though based on a formula taking into account the CPO price on the world market and validated by the provincial authorities. In the Indonesian NES model, credits proposed to contracted-smallholders are paid back through a direct withdrawal by the company on the payment of FFB. If under a mill monopoly there is no chance for a smallholder to escape from his debt, although in situations where there are several mills, this risk is limited by the organization of contracted smallholders as cooperatives closely working with the company. On the opposite, the presence of the artisanal palm oil sector and the domestic palm oil production in Cameroon opens a window for contracted-farmers not to respect their contract, and sell their production out of the mill without paying back their debt (Feintrenie, 2012a).

Another pattern of industry-smallholders partnershipis being developed in Colombia under the name of"Alliances". Alliances are based on a joint-venture between an oil palm company

which builds a mill and owns an industrial plantation, and individuals who join the partnership with their own land and become shareholder of the mill in proportion to the surface of their land. The involved company benefits from both some financial help under favorable conditions under the supervision of the government and from a secure supply of FFB. The individual FFB producers benefit from technical assistance, access to credit, access to inputs at better prices, and the organized collection of FFB at plantation gate (FEDEPALMA, 2010). In this business model, the joint-venture covers both the plantation and the mill, which creates an interest for the contracted producer in the economic results of the mill, and thus a motivation not to sell his/her FFB to another mill. This model opens new areas of interest in the search for an adequate business model for Cameroon's oil palm development.

3.5.3 Social and environmental impact of large-scale oil palm development

Oil palm development offers direct and indirect employment opportunities to the local population as well as income through the payment of taxes to the state (Hoyle and Levang 2012). As opposed to"smallholders", most agro-industries prefer to utilize the natural forest for the development of oil palm plantations. This is advantageous in the sense that they can easily get access to a big block of concession, which leads to reduction in management cost as opposed to concessions scattered in space, coupled with increased soil fertility status after the natural forest is felled down. If governance measures are weak and coupled with corrupt practices, these companies enforce their deals with the government, thereby undermining the local and indigenous population who lay customary claims to land. The absence of free prior and informed consent could be a potential source of conflict between local populations and agro-industries, since land is expropriated without prior consultation or any meaningful compensation (Freudenthal et al., 2012). When the agro-industries finally become established, the social infrastructure development such as electricity, pipe-borne water, housing, hospitals, etc., are often limited to estate employees. As such, it is very common to see a well-established company with a "sea" of surrounding villages living in abject poverty. In contrast the natural forest is a source of livelihood to the local population who rely on it for the harvesting of non-timber forest products, fuel wood, medicinal plants and bush meat. The natural forest is also home to a rich biodiversity of different species of plants and animals (Nguiffo and Schwartz 2012; Pledran 2012; Meijaardand Sheil 2013) and as such the utilization of this ecosystem for oil palm development if care is not taken could lead to deforestation, habitat destruction, habitat fragmentation and the destruction of keystone

species. According to Sayer et al. (2012), when oil palm replaces the natural forest, it takes about 75–93 years for carbon sequestration gains to be recorded, compared to less than 10 years for grasslands and up to 600 years for peat forest. If care is not taken untreated waste from the mills, e.g. POME (palm oil mill effluent) with a high percentage of methane, together with runoff from herbicides, pesticides and fertilizers could enter water bodies leading to pollution/eutrophication. It is against this backdrop that some environmental and social NGOs have stressed the need for the utilization of ”already cleared land” for the development of oil palm plantations (Greenpeace, 2013). ”Already cleared land” could be grassland, fallow land, food-crop land and, to an extent, secondary forest. In Cameroon, for example, the grassland regions are in deficit in the amount of rainfall for oil palm cultivation; here, there is need for the development of drought-tolerant varieties. Fallow land, food-crop land and secondary forest are in the hands of the local population and these ”already cleared land” are not continuous in their spatial distribution. Here oil palm smallholdings can be encouraged. Good partnership between incoming companies or already established ones and local population/palm oil producers respectively, could be mutually beneficial for both parties, since it will help in poverty reduction of the local population, reduce social tension between the locals and incoming agro-industries, and will also lead to a reduction in deforestation rates. There is also the need for the strict adherence to the principles and criteria of RSPO (Round Table for Sustainable Palm Oil), as a means of ensuring both environmental and social sustainability and to benefit from future market for CPO (Greenpeace, 2013).

3.6 CONCLUSION

This study exposes the strengths and weaknesses faced by different types of palm oil producers. Some of the strengths possessed by the different palm oil producers include: posing little threat to the primary forest; artisanal mills, despite their low extraction rate, fetch better income; availability of a domestic and sub-regional market for the sale of palm oil; availability of abundant already cleared land which could easily be used by the different palm oil producers; basic knowledge on oil palm cultivation, though this knowledge may differ according to the type of producer.

The weaknesses exposed by the study include: the fact that none of the palm oil producers are presently in partnership with the agro-industries; very low yields partly attributed to the high cost of inputs; high cost of quality planting materials; low extraction rate of artisanal mills; little access to get credits from the banks, absence of social security for the labor force; bad

state of the roads leading to most of the oil palm plantations, resulting in high transportation cost and making transportation of FFB almost impossible; rudimentary farming tools; and land grabbing for oil palm development by Elites.There is a clear need for a government policy that will address at least some of the weaknesses mentioned above and that will be able to meet the poverty reduction strategy plan put in place by the government of Cameroon by 2035, without jeopardizing the environment. It highlights the need for an effective partnership between the palm oil producers sector, the agro-industries and research institutions, and the need for farm inputs to be subsidized. Innovative research findings on ways to improve the yield and extraction rates/quality control measures of these artisanal mills are also required. There is also a need to maximize the utilization of oil palm by-products. The gazetting and utilization of "already cleared land" for oil palm cultivation is necessary to limit encroachment into the primary forest. There is also a need for further research into various intercropping models at pre-production and production stages that do not negatively affect the yield of the oil palm. It is against this backdrop that "the national strategy for the development of a sustainable oil palm sector in Cameroon" was created by Ministry of Agriculture and Rural Development decision No. 00250/CAB/MINADER/29 in July 2013, under the umbrella of MINADER, with the involvement of other key ministries and research institutions, including the Center for International Forestry Research (CIFOR). The objective is to look at ways of improving the productivity of oil palm, putting in place sustainable development procedures that take into account the social, economic and environmental realities, as well as transparency in legal and institutional reforms geared towards the acquisition of permits for oil palm development.

4 CHAPTER FOUR

ARTISANAL MILLING OF PALM OIL IN CAMEROON

4.1 ABSTRACT

The present study was carried out in four of the seven oil palm production basins generated during the FONADER-sponsored smallholder development scheme in the late Seventies and Eighties. The four basins include: Eseka, Dibombari, Muyuka, and Lobe. The objective of our study was to understand why oil palm smallholders prefer to mill their fresh fruit bunches (FFB) despite the low extraction rates of the artisanal mills and the remarkable presence of industrial mills where they could sell bunches. Our study included the submission of 200 semi-structured questionnaires to different categories of palm oil processors from 131 artisanal mills. Categories included both millers (mill owners and mill managers) and users (smallholders and intermediaries). Our results showed that the processing of FFB in artisanal mills was able to generate a better income to all categories of processors especially during the low production season. Smallholders in Dibombari and Muyuka were found to get the highest additional profit reaching 65.2 and 74%, respectively at low season, when compared to income generated by the selling of FFB at 48,000 FCFA and 50,000 FCFA (73.18 and 76.22) €/ton to SOCAPALM and CDC mills, respectively. The artisanal milling activity also provided temporary employment opportunities to young men, with an impact on juvenile delinquency and rural exodus. The present study also revealed that the cost of FFB processing, the extraction rates of the mills and the demand for red palm oil were amongst the factors which greatly affected the decision making of oil palm processors.

Key words: Artisanal milling, crude palm oil, *Elæis guineensis*, extraction, vegetable oil.

4.2 INTRODUCTION

Artisanal milling is quite common to the oil palm belt of West and Central Africa, which is the cradle of the oil palm (*Elæis guineensis* Jacq.). Fresh fruit bunches (FFB) from natural stands of oil palm (Dura variety) are known to be harvested for immemorial times for the production of red palm oil, which is used in the preparation of numerous traditional dishes. Ngando et al. (2011) estimated that artisanal mills in Cameroon contribute 30% of the total palm oil produced in the country. Historically, the most common method of artisanal milling was the trampling method, for which boiled nuts were taken to the side of a nearby stream and placed on a concave rock or dug out tree trunk, trampled by foot in order to extract the crude oil which was later skimmed-off to produce red palm oil. Another common method was the pounding of boiled nuts with the use of a mortar and pestle. These two forms of artisanal milling have been replaced by improved mechanical artisanal mills with better milling efficiency.

In Cameroon, the first industrial plantation (Ferme Suisse) was developed in 1907/1909. By 1928 Pamol Plantations was created followed by the Cameroon Development Corporation (CDC) in 1947/1948, then SAFACAM in 1959 and lastly SOCAPALM in 1968 (Carrère, 2010). Such agro-industrial plantations exploit their own palms whose bunches are supplied to

their industrial mills for processing. In the late 1970s the government of Cameroon began to develop the smallholders' oil palm sector with funding assistance from the World Bank under the control of FONADER (National Fund for Agriculture and Rural Development) (Bakoumé et al., 2002). This scheme was in charge of supplying the necessary funds to agro-industries which were in turn responsible for the supply of the necessary in-kind resources and technical expertise to the local land owners who were eligible to join the nucleus estate and smallholder scheme (NESS). Smallholders involved in the scheme were supposed to supply all their harvested FFB to the company's mill in order to pay back their credit. The size of holdings ranged from 2 to 5 ha. By then, artisanal milling was virtually unknown in the surroundings of these companies. With the collapse of FONADER in the early 1990s, smallholders started facing problems for the supply of FFB to agro-industrial companies such as Pamol, CDC or SOCAPALM.

First, smallholders who supplied their FFB to the companies were not paid regularly. Sometimes, they had to wait for 3 months or more to get paid. In the case of CDC, the Smallholders' Department that used to exist as a separate entity was merged with Estate Management under the control of the Estate Manager and this became a major obstacle to the smooth functioning of the Smallholders' Department. The transportation of harvested FFB from the smallholder's farm to the company's mill also experienced delays as the priority was given to the company's fruits. Smallholders at times had to wait for 2 to 3 days or even a week to ship their palm fruits, which were then downgraded at the mill. Even when smallholders tried to transport their FFB by their own means, they often had to face high transportation cost due to the poor state of the roads especially during the rainy season. Smallholders also complained about low FFB prices and they based their argument on the fact that the companies made use not only of the CPO, but also of the other by-products like kernel, fiber, empty fruit bunches and kernel oil. Stringent quality control measures put in place for FFB delivered at the mill were at the origin of supplementary discounts. After the collapse of FONADER in the 1990s, the supply of inputs, technical advice, and quality planting material came to an end. Such services were considered as the bond between smallholders and agro-industrial companies.

Smallholders became increasingly reticent to pay back their loans through the supply of their FFB to the Company. This situation often generated conflicts between company officials and smallholders. Some smallholders considered the Project as a governmental subsidy to the poor farmers' population, something which did not need to be reimbursed. Such conflicts strained the existing relationship between smallholders and the major companies.

The fall in the market prices for cocoa and coffee, the economic crisis of the late 1980s and early 1990s and the devaluation of the Franc CFA fueled the diversion of farmers from main cash crops to the cultivation of oil palm (Ngando et al., 2011). This situation also gave rise to the development of independent smallholders, especially the "elites", who were richer newcomers able to develop large areas of plantations (Levang and Nkongho, 2012). The liberalization policy followed by the Government of Cameroon also meant that in due time, public companies were supposed to be privatized and as such the subsidies they used to tap from the Government, which enabled them to cater for smallholders, were drying out.

The new generation of small and medium-holders which appeared in the 1990s and which was not always located in the vicinity of industrial mills had to look for means of processing their own FFB production. The first generation of dependent oil palm smallholders was also fed up with the management system put in place by the companies, so they decided to process their own FFB given that the demand of red palm oil in the local market was rapidly increasing. Within two decades, the number of artisanal palm oil mills grew tremendously and the supply of FFB to the major companies decreased accordingly.

Officials in the Ministry of Agriculture and Rural Development consider artisanal milling as a huge waste because of its low extraction efficiency compared to industrial mills. Agro-industrial companies must temporarily close down their mills during the low production season due to the absence of FFB from smallholders, which usually complement FFB from the estate. Finally, such companies consider that a large proportion of the FFB processed in artisanal mills is stolen from their estates. Thus, plantation companies regularly ask the Government to close down artisanal mills, at least those which are close to estates. This did not happen, as the number of artisanal mills is still on the rise.

The overall objective of the present study was to assess the profitability of the processing and marketing of red palm oil. The specific objectives were to identify the different types of people involved in artisanal milling; the production efficiency of the various types of artisanal mills, the quality control measures put in place during processing of FFB; to assess the return to labor, milling charges and contribution to income for each type of palm oil processor; to identify processors involved in the sale of red palm oil in the domestic markets; describe the market chains - artisanal or informal (wholesalers and retailers); to describe fluctuations in the price of red palm oil in the local market over the years; to assess the problems hindering the smooth functioning of the sector.

The major underlying question was: Why do oil palm smallholders prefer to mill their FFB irrespective of the low extraction rates of these artisanal mills?

4.3 METHODOLOGY

A preliminary survey resulted in the selection of four oil palm production basins. This choice was based on the long-standing relationship between oil palm producers and agro-industrial Companies in basins such as Eseka, Dibombari, Muyuka and Lobe. Each basin is located close to an industrial mill belonging to one of the following companies: Eseka- SOCAPALM; Dibombari- SOCAPALM; Muyuka- CDC and Lobe- Pamol.

As a first step, information about the distribution and abundance of the different types of artisanal palm oil mills was obtained from the delegation of Agriculture at the local level, oil palm smallholders and employees of the nearby agro-industries. Then a randomized sample of the different types of artisanal mills in each zone was selected. A total of 131 artisanal mills were sampled with the submission of 200 semi-structured questionnaires during the peak season of oil palm production, which falls within the months of February to June.

Three types of service providers were identified in the course of the survey, namely: mill owners, mill managers and mill workers. Information concerning the functioning of the mill was obtained from either the mill owner who personally supervised the mill or the mill manager when the owner was absent. Out of the 131 sampled millers, 125 were processing FFB from either their own farms or through the purchase of FFB from other smallholders in addition to the utilization of their mill for commercial purpose.

The survey also identified two types of mill users, namely oil palm smallholders and middlemen. A total of 48 of the sampled users were oil palm smallholders who did not own artisanal mills but brought their FFB to the mill for processing. A total of 21 users were middlemen who did not own oil palm plantations but were buying FFB from smallholders for processing in an artisanal mill.

4.4 RESULTS

4.4.1 Type of service providers (millers) and users

The respondents under study were categorized into palm oil processors, namely mill owners and mill managers; and users, that is, smallholders and middlemen. Mill owners own and manage their own palm oil mill, while mill managers are employed by the proprietor of the mill to manage and supervise the various activities in the mill. Smallholder users are those who carry their own FFB to the mill, pay for milling and labor charges and return with the palm oil. Middlemen do not own oil palm plantations, they buy FFB from smallholders,

organize transportation to the mill, pay for the milling and labor charges, and return with the palm oil.

Our survey revealed that 95% of mill owners and mill managers also own plantations. The primary reason for them to buy a mill was basically to mill the FFB from their plantation in order to get more income from the sale of red palm oil, before using the mill for commercial purpose. Smallholders who did not own artisanal mills harvested and processed FFB in a commercial artisanal mill. Women and young people constitute the major part of the middlemen: they buy FFB and process it in an artisanal mill. If compared to oil palm smallholders, middlemen were relatively scarce in the sampled mills because most smallholders preferred to mill their FFB because of added value.

We found that artisanal milling was a major source of income for the different service providers/processors. Other sources of income for the sampled respondents included farming of other cash crops/food crops, as well as off-farm activities.

4.4.2 Identification of service providers and mill users

The distribution of respondents and personal information for the service providers and users are shown in Table 12 and 13 below. With regards to gender repartition, more men were involved in artisanal milling than women and young people, probably because men have customary rights to land and are able to plant and harvest directly from their farms during peak and low season while women and young people must purchase FFB.

Table 12 : Distribution of respondents by type of service provider and users.

Type of service provider/users	**Frequency of service providers/users in:**				**Total**
	Eseka	**Dibombari**	**Muyuka**	**Lobe**	
Millers	33	41	23	34	131
Smallholders	11	05	19	13	48
Intermediaries	06	04	08	03	21
Total	50	50	50	50	200

** Note: 95% of millers also own oil palm plantations*

Mill owners are older on average, while middlemen are younger, thus revealing that more young men and young women are involved in the activity.

Table 13 : Personal information from respondents in the four zones under study

	Mill owner	Mill manager	Smallholder (user)	Intermediary (user)	Total
Household head	52	47	33	09	141
Non-household head	11	21	15	12	59
Gender:					
Male	55	60	41	13	169
Female	08	08	07	08	31
Average age	47	41	39	34	40
Ethnic group:					
Native	26	21	24	07	78
Non-native	37	47	24	14	122
Level of education:					
Primary	25	25	18	09	77
Junior high school	25	20	17	05	67
High school	10	12	09	04	35
University	03	11	04	03	21
Marital status					
Married	52	47	34	11	144
Single	08	20	11	08	47
Widow(er)	02	01	02	02	07
Divorced	01	0	01	0	02

Source: Field survey 2012

More non-natives were involved in the activity, thus indicating that they need to stabilize their income levels especially when they are still to get fully integrated in their new community. The survey also reveals that more mill managers as compared to the other categories were university graduates and probably they were able to use this activity to generate income to register for public examinations or to continue their studies. More married persons were involved in artisanal milling as compared to singles. While the husband was involved in the processing of FFB, the wife was involved in the marketing of the palm oil.

4.4.3 Types of artisanal palm oil mills in the sampled zones

The study identified six different types of artisanal palm oil mills in the selected zones. These are: i) manual vertical press; ii) digester with separate manual metallic cage press (hand-operated screw press); iii) motorized horizontal screw press; iv) digester with separate hydraulic press; v) combined motorized digester/hydraulic press system (digester screw press) and vi) semi-automated press.

The Manual press is locally called tournée tournée (manual vertical press): This press adopts the wet process during which the sterilized fruits are poured into the digester and the fruits are macerated by manually turning the vertical shaft to extract a mixture of oil and water which is collected at the base. The resulting mixture of water and oil is poured into larger drums. This mixture is then clarified to extract red palm oil.

Manual or hand press with a digester adapted to a car engine [digester with separate metallic cage press (hand operated screw press)]; this press follows the dry process. A vertical digester adapted to a car engine is used in the maceration process. A mixture of oil, moisture, fibers and nuts is collected at the base and this mixture is hand-pressed in a metallic cage to extract the oil.

Motorized press (motorized horizontal screw press); this press follows the wet process during which sterilized fruits are poured into the digester and the fruits are macerated. Hot water is continuously poured into the digester at a regular rate in order to wash off the released oil. The resultant mixture of water and oil is poured into larger drums. This mixture is then clarified to extract red palm oil.

Digester with separate hydraulic press; this press adopts the dry process technique where by sterilized fruits are poured into the digester and the fruits are macerated. A mixture of oil, moisture, fibers and nuts is collected at the base and this mixture is pressed using a hydraulic press to extract the oil.

Combined motorized digester/hydraulic press system (digester screw press); this press also adopts the dry process technique. In this press, the digester is linked to the press through an operating table. Here digestion and pressing take place simultaneously powered with an engine.

Semi-automated press; this press also adopts the dry press technique. Here little or no human labor is needed as most of the processing stages (boiling, digestion, press and clarification) are mechanized. This system is the most efficient and the most expensive one which makes it unaffordable to the majority of small-scale millers.

Depending on the zone, it was common to find respondents who were linked to specific artisanal mills for reasons partly linked to availability and production efficiency. Table 14 shows the utilization of the different artisanal palm oil mills by sampled respondents in the four areas under study.

Table 14 : Type of artisanal mills utilized by sampled respondent

Type of processing equipment	Frequency of equipment used by respondents				Distribution of types of presses in the four study areas
	Eseka	Dibombari	Muyuka	Lobe	
Manual vertical press	26	20	3	0	49
Digester with separate manual cage press	0	2	0	26	28
Motorised horizontal screw press	7	16	15	0	38
Digester with separate hydraulic press	0	0	3	5	8
Combined motorised digester/ hydraulic press	0	1	0	4	5
Semi-automated press	0	1	1	1	3
Total	33	40	22	36	131

Source: Field survey 2012

Motorized horizontal screw presses were preferred in all four zones, followed by manual vertical press while semi-automated palm oil press was rarely used. As opposed to the other artisanal palm oil presses, which were mostly used for commercial purpose, the manual vertical press was mostly bought for home use. The cost of a given type of artisanal mill depends on the complexity and extraction efficiency of the mill. The manual vertical mill was the cheapest one in terms of cost with an average of 150,000-250,000 FCFA (228.67 to 381.12 €), the most expensive artisanal mill was the semi-automated with an average price of 15 to 20 million FCFA (22,867 to 30,490 €), while the others ranged in price from 2 to 5 million FCFA (3,050 to 7,622 €). The durability of the palm oil press depends on whether it was purchased as new or second hand. The maximum intake capacity of the sampled mills was 1 ton FFB per hour in the semi-automated mills.

4.4.4 Various steps of FFB processing

Pickup cars are used to transport FFB from the plantation to the mill, while motorbikes equipped with special bags carry loose fruits, or even FFB where roads are not passable by cars. When bunches arrive at the artisanal mill, they are stored in separated piles for each farmer and are covered with jute bags or palm leaves and left to ferment for almost one week. Depending on the work plan of the mill manager, FFB could either be chopped/splitted into halves with a cutlass before being allowed to ferment. After 7 days, the fruits from fermented bunches can easily get detached from spikelets. The next operation is the stripping of whole or chopped bunches with the use of the blunt edge of a cutlass. The sieving of loose nuts separates the nuts from the dirt with the use of a locally fabricated wire mesh. As compared to the chopping/splitting, stripping operations which are considered as operations for men only, the selection of loose nuts is mostly done by women. The loose fruits are then poured into 200 L (or bigger) metallic drums for boiling. The required amount of water is put in the drum, and a fire is lighted underneath.

The mixture is allowed to boil for around 4 to 6 h. Boiling the loose nuts before digestion plays an important role to soften the nuts, inactivate lipase enzymes and coagulate proteins (Babatunde et al., 2003; Chow and Ma, 2007). When the boiled nuts are ready, digestion can start. Digestion is the process by which the boiled or sterilized fruits are macerated for easy separation of oil from fibers. This operation utilizes the palm oil press from the manual mill to the more sophisticated semi-automated press. Jannot (2000) distinguished between two types of digestion. Indeed, in the continuous type, oil mixed with water and sludge are collected at one outlet while the chaff comes out through another. In the discontinuous type, after digesting the boiled fruits, the mash can further be pressed using the same machine or a separate one in order to extract red palm oil. The last operation is clarification, which involves the boiling of a mixture of sludge and effluent with the addition of the required quantity of water for a period of 2 to 3 h. At the end of this operation, the red palm oil is left suspending on the top of a mixture of water and effluent. The red palm oil is then skimmed off and placed into gallons of various sizes and allowed to cool before being corked. The various steps in FFB processing are shown in the flow chart in figure 8 below.

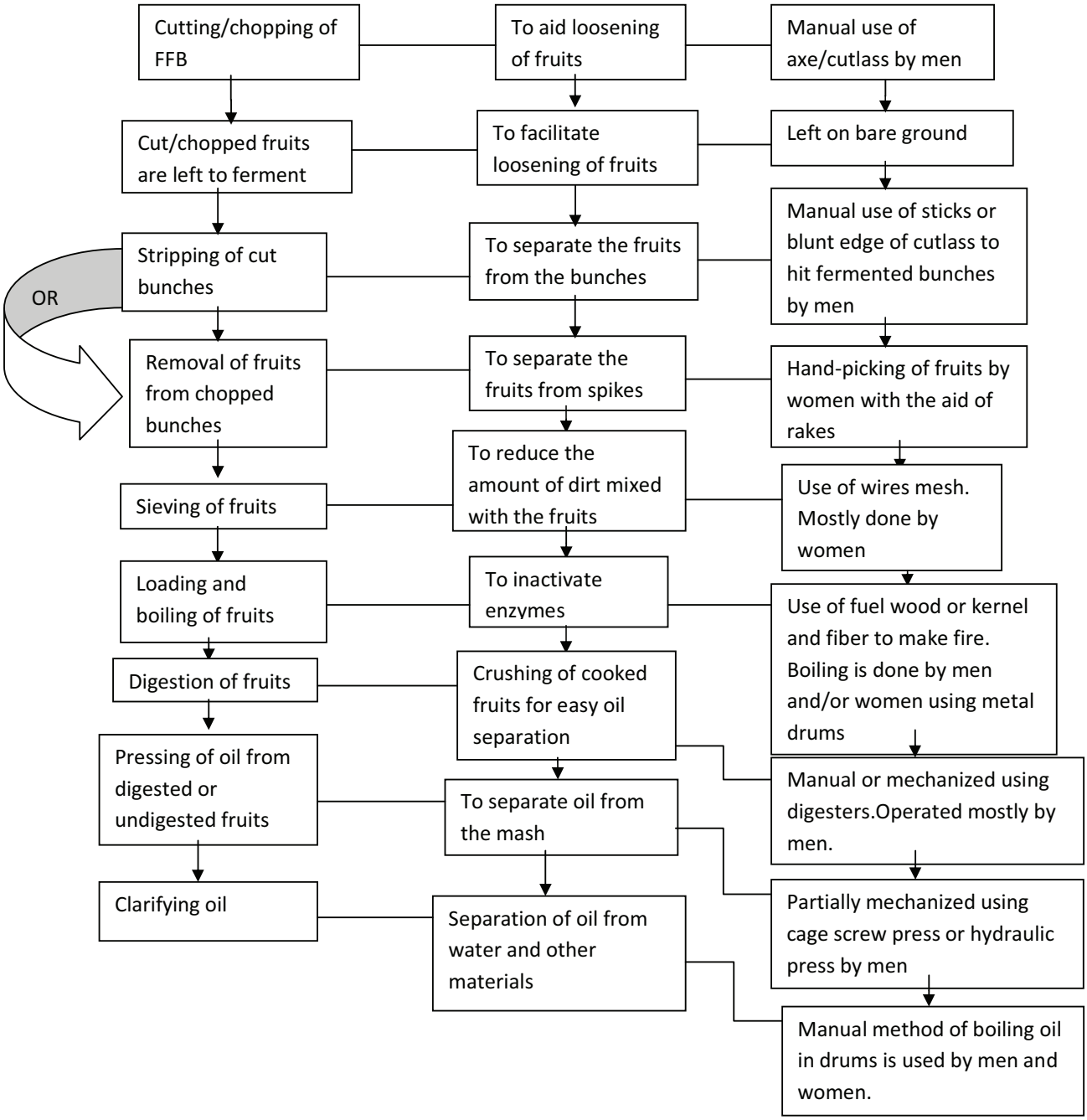

Figure 8: Schematic representation of milling activities (Nchanji et al., 2013).

4.4.5 Estimation of extraction rates from the different types of palm oil presses

Extraction efficiency refers to the time it takes to press a given quantity of loose nuts, as well as the quantity of red palm oil produced at the end of the milling process. Based on the different types of palm oil mills identified during the present study, the semi-automated mill was ranked first with the highest extraction efficiency reaching an average 18%, while the manual vertical press had the lowest extraction efficiency with an average 13.3% during peak season as shown on Table 15. On average there was a reduction in the quantity of palm oil produced at low season when compared to the peak one. Reasons for this reduction could be linked to poor fruit set during low season of oil palm production. The peak season falls within the months February to June. The low season falls within the months July to September, and this is the period during which oil palm registers a drop in production. The mid-season falls within the months October to January, with a production in between the two former ones. These production seasons are directly linked to the extended periods of drought observed in the course of the year.

Table 15 : Extraction rate of the different types of palm oil presses

Efficiency parameter (in peak season)	**Type of presses (ranked from least to most efficient)**					
	Manual vertical press	Digester with manual metallic cage press	Motorised horizontal screw press	Digester with separate hydraulic press	Combined motorised digester/ hydraulic press	Semi-automated press
Average quantity (in L) of CPO/ton of FFB	148.86	156.94	163.55	166.22	167.77	200.00
Average quantity (in kg) per tonof FFB	133.98	141.25	147.2	149.6	151	180.00
Oil extraction rate(%)	13.3%	14.1%	14.7%	14.9%	15.1%	18.0%

Source: Field survey 2012.

4.4.6 Type of labor utilized and duration for milling activities

In Dibombari, Muyuka and Lobe, majority of the sampled respondents utilized hired labor to process FFB, while few respondents used both hired and family labor. In Eseka, the sampled respondents employed either family or hired labor, depending on the quantity of FFB to process and the availability of labor, or in most instances a combination of both family and hired labor. This can be due to the dominance of manual mills for household use in Eseka. Similarly to the case of smallholder oil palm plantations, labor in the artisanal mills is dominated by non-natives (migrant workers). The type of operations performed in the mills (from chopping/splitting, stripping, sieving/selection, boiling, to digestion and clarification) requires physical strength and is often provided by young men aged 18 to 45. It is rare to find women working in the artisanal mills, and even when they do so; their work is limited to the sieving/selection of loose nuts or to office work in larger mills.

The labor time and working days are stepped up during peak production season due to an increase in the number of bunches entering the mill as compared to during the low production season.The seasonal differences in oil palm production also has an effect on the quantity of work available in these artisanal mills at each given season.This is one of the reasons why artisanal mills tend to recruit temporary workers, with payment based on the quantity of FFB processed (Nchanji et al., 2013).

4.4.7 Profitability of FFB processing to millers and users

The processing of FFB into red palm oil provides income to the mill owner through the payment of milling charge, and to the mill workers through the payment of labor charge. In all four zones under study, artisanal milling was a major source of income for the respondents especially during the peak season because of an upsurge in the number of bunches to process. During the peak season when the supply of FFB is high, it is easy for a middleman to buy bunches and process, as compared to during the mid-peak and low season when there is a drop in production. This drop in production is inversely proportional to an increase in the demand of red palm oil. Table 16 provides data on costs and benefits incurred in the processing of one ton of FFB according to the season.

Table 16 : Seasonal changes in average cost/net income incurred in the processing of one ton of FFB in FCFA (Euros)

	Eseka		Dibombari		Muyuka		Lobe	
	Peak	**Low**	**Peak**	**Low**	**Peak**	**Low**	**Peak**	**Low**
Cost of 1 ton FFB	40,000 (60.98)	45,000 (68.60)	42,000 (64.03)	50,000 (76.22)	41,310 (62.98)	47,405 (72.27)	36,875 (56.22)	40,800 (62.2)
Transport Ation	11,347 (17.3)	11,347 (17.3)	11,624 (17.72)	11,624 (17.72)	8,735 (13.32)	8,735 (13.32)	12,237 (18.66)	12,237 (18.66)
Labour charge	8,845 (13.48)	8,845 (13.48)	9,723 (14.82)	9,723 (14.82)	6,392 (9.74)	6,392 (9.74)	7,868 (11.99)	7,868 (11.99)
Milling charge	7,139 (10.88)	7,139 (10.88)	5,376 (8.2)	5,376 (8.2)	5,592 (8.52)	5,592 (8.52)	3,726 (5.68)	3,726 (5.68)
Total expenditure	67,331 (102.65)	72,331 (110.27)	68,723 (104.77)	76,723 (116.97)	62,029 (94.56)	68,124 (103.85)	60,706 (92.55)	64,631 (98.53)
Palm oil price FCFA/L	400.2 (0.61)	543.8 (0.83)	498.2 (0.76)	669.7 (1.02)	513.6 (0.78)	658.8 (1.0)	399.2 (0.61)	505.7 (0.77)
Red oil produced in L /ton FFB	145.3 (0.22)	140 (0.21)	172.8 (0.26)	158.3 (0.24)	186 (0.28)	163.6 (0.25)	165.9 (0.25)	153.6 (0.23)
Gross income	58,150 (88.65)	76,131 (116.06)	86,090 (131.24)	106,018 (161.62)	95,526 (145.63)	107,787 (164.32)	66,225 (100.96)	77,675 (118.41)
Net income	**-9,181 (-13.1)**	**+3,801 (+5.8)**	**+17,367 (+26.48)**	**+29,295 (+44.66)**	**+33,497 (+51.07)**	**+39,663 (+60.47)**	**+5,519 (+8.41)**	**+13,044 (+19.89)**

Source: Field survey 2012.

The purchase and milling of FFB gives a net positive income to middlemen in all studied zones except for Eseka in which a negative balance can occur during peak season. In all other areas, even women and youths who do not own oil palm plantations can make a positive turn over when they buy and process FFB. One ton of FFB is able to produce slightly more palm oil after milling during the peak production season as compared to during the low production season. However, this increase in production is constraint by the lower price of palm oil during peak production. The four factors which impact the financial output of artisanal palm oil milling are: i) the cost of production, ii) the price paid for one liter of red palm oil (depending on the season), iii) the cost of transportation to major markets and iv) the extraction efficiency of the artisanal mill.

4.4.8 Why do smallholders prefer to mill FFB by themselves?

Even though the milling efficiency of artisanal mills are lower, smallholders make more money through self-milling than selling FFB to the agro-industrial companies. Oil palm smallholders also say that they make good use of some of the by-products released in the

course of processing. For example, kernels and fibers are utilized as fuel for the boiling of loose nuts and during clarification, as such very little is spent for the purchase of fuel wood.

The purchase price of a ton of FFB by the three agro-industrial companies in Cameroon: SOCAPALM, CDC and Pamol are 48,000 FCFA (73.18 €), 50,000 FCFA (76.22€) and 42,000 FCFA (64.03€) respectively and this price is constant during peak and low season. Any change in the price of crude palm oil in the global market has no incidence on the price paid to smallholders for FFB. From Table 16, it is clear that artisanal milling is most profitable to oil palm smallholders in the Dibombari and Muyuka zones during the low and peak season. The situation is quite different for oil palm smallholders in the Eseka and Lobe zones where artisanal milling is only profitable during the low season. As compared to Dibombari and Muyuka areas which benefit from the presence of a large local market for the sale of red palm oil, Eseka and Lobe are more isolated and buyers have to travel for longer distances from the towns and cities. The poor state of roads has also a negative impact on the price of red palm oil especially during the peak season when supply outweighs demand. Results from Table 17 also shows that artisanal milling is profitable to oil palm smallholders without mills in Eseka and Lobe only during the low season.

Table 17 : Comparative net income of a smallholder from the sale of red palm oil or FFB in FCFA (Euros).

For 1 ton of FFB	Eseka		Dibombari		Muyuka		Lobe	
	Peak	Low	Peak	Low	Peak	Low	Peak	Low
Sold to an intermediary	40,000 (60.98)	45,000 (68.60)	42,000 (64.03)	50,000 (76.22)	41,310 (62.98)	47,405 (72.27)	36,875 (56.22)	40,800 (62.2)
Sold to an agro-industry	48,000 (73.18)	48,000 (73.18)	48,000 (73.18)	48,000 (73.18)	50,000 (76.22)	50,000 (76.22)	42,000 (64.03)	42,000 (64.03)
Processed in an artisanal mill	30,819 (46.98)	50,200 (76.53)	59,367 (90.5)	79,295 (120.88)	74,807 (114.04)	87,068 (132.73)	42,394 (64.63)	53,844 (82.08)
Processed in own mill	37,958 (57.87)	57,339 (87.41)	64,743 (98.7)	84,671 (129.08)	80,399 (122.57)	92,660 (141.25)	46,120 (70.31)	57,570 (87.87)

Source: Field survey 2012

When there is a fall in the price of red palm oil during peak production season, especially in zones where smallholders cannot break even after milling, it is advisable for oil palm smallholders to supply their FFB to the agro-industrial mills. When there is an increase in the price of red palm oil, it is advisable for oil palm smallholders to mill their FFB in artisanal mills. On the other hand, agro-industries should vary the prices for FFB according to seasons, so as to attract more smallholders.

4.4.9 Marketing of red palm oil

The wholesale and retailing of red palm oil is a major source of income especially to the female population. Red palm oil is sold right at the premises of the palm oil mill, where it is common to find men and women alike coming to buy this product. When palm oil is purchased at the doorstep of artisanal mills; it is then transported to the villages, nearby towns or city markets where it can either be wholesaled or retailed. Soap production and palm oil refining companies like AZUR and MAYOR, based in Douala have their agents in the field who buy palm oil directly from the artisanal mills in large quantities and transport it to the factories using big tankers. The purchase of smallholder palm oil by second transformation companies is not recorded or traced, and this leads to corrupt practices where transformers evade taxes that are supposed to be paid to the State treasury. Red palm oil is also purchased and transported to the Northern part of Cameroon where oil palm is not cultivated due to unfavorable climatic conditions. It is also sold to neighboring countries like Nigeria, Equatorial Guinea, Gabon, Congo, Central African Republic and Chad.

There has also been a steady increase in the wholesale and retail price for red palm oil over the years, and this can be attributed to both the increase in population demand and the increase in the utilization of palm oil especially by downstream industries as shown in Table 18.

Table 18 : Average wholesale price of palm oil in artisanal mills in FCFA (Euros)/Liter.

Zone	Size of container	2009		2010		2011		2012	
		Peak	Low	Peak	Low	Peak	Low	Peak	Low
Eseka	22 L	242 (0.37)	281 (0.43)	281 (0.43)	343 (0.52)	356 (0.54)	474 (0.72)	400 (0.61)	544 (0.83)
Dibombari	20 L	488 (0.74)	564 (0.86)	523 (0.8)	585 (0.89)	541 (0.82)	614 (0.94)	498 (0.76)	670 (1.02)
Muyuka	77.4 L	384 (0.59)	521 (0.79)	506 (0.77)	674 (1.03)	522 (0.8)	658 (1.0)	514 (0.78)	659 (1.0)
Lobe	118 L	295 (0.45)	338 (0.52)	329 (0.5)	372 (0.57)	369 (0.56)	420 (0.64)	399 (0.61)	506 (0.77)

Source: Field survey 2012

Palm oil is sold in wholesale at artisanal mills while in villages, towns and city markets, it is sold either in wholesale or at retail prices. There are periods in the year (especially during low production season) when the price of a liter of red palm oil can reach 1,000 to 1,300 FCFA (1.52 to 1.98 €) especially in large cities like Yaoundé and Douala. In towns like Buea, Limbe, and Kumba; the retail price for a liter of palm oil during low season can reach 800 to

900 FCFA (1.22 to 1.37€). Meanwhile, during peak production season, the price for a liter of red palm oil can fall down to 400 to 500 FCFA (0.61 to 0.76 €).

4.5 DISCUSSION

4.5.1 The profitability of artisanal milling

Artisanal milling generates income to people from all social classes, age groups and it is not gender biased in the sense that even women who do not have customary rights to own land (with the exception of Eseka) can buy fresh fruit bunches, process them in the artisanal mills, sell the resulting red palm oil and make a meaningful profit (Ibeckwe, 2008; Olagunju, 2008). According to Soyebo et al. (2005) and Ezealaji (2011), women make more profit when they buy FFB, process and sell the resulting palm oil than if they just buy and sell red palm oil alone. Women are disadvantaged by the lack of necessary capital, limited access to extension services and lack of land ownership. Since most women fall in the category of middlemen, they often have to face the problem of the unavailability of FFB during the low season, since most smallholders will not want to sell their FFB because of price increase in the processing and sale of red palm oil.

Indeed, one of the ways to adapt to this situation is to process and store red palm oil during the peak season and wait for the low season, in order to sell it when the price is better. Some middlemen also rent mature oil palm plantations for the purpose of harvesting and processing FFB. The young men who work in these artisanal mills also benefit from the milling activity and this is an efficient way to reduce rural exodus and juvenile delinquency. Taiwo et al. (1999) and Ekine et al. (2006) also describe the involvement of men in high-energy demanding jobs, while more women accept less strenuous jobs, while Solomon and Okolo (2008) refer to the oil palm as a “male crop”. The smallholders are also able to make additional profit from the processing of FFB, compared to the sale of bunches directly to the agro-industrial mills, especially during the low season when the price of red palm oil is on the rise as shown in Table 19.

Artisanal milling was quite profitable in three of the four zones under study, for both peak and low season with the exception of Eseka which recorded a deficit at peak season. Dibombari and Muyuka zones recorded the highest profit from artisanal milling at low season. Such variation in profit between different zones could be linked to the cost of production, the existing market for palm oil, the extraction efficiency of the mill and the cost of

transportation. When oil palm smallholders cannot make a profit from the processing of their FFB, it is advisable for them to supply their FFB to the agro-industry.

Table 19 : Additional profit for smallholders when FFB is processed in artisanal mills

Fate of FFB	Eseka		Dibombari		Muyuka		Lobe	
	Peak	Low	Peak	Low	Peak	Low	Peak	Low
Processed in an artisanal mill	30,819 (46.98)	50,200 (76.53)	59,367 (90.5)	79,295 (120.88)	74,807 (114.04)	87,068 (132.73)	42,394 (64.63)	53,844 (82.08)
Sold to agro-industry	48,000 (73.18)	48,000 (73.18)	48,000 (73.18)	48,000 (73.18)	50,000 (76.22)	50,000 (76.22)	42,000 (64.03)	42,000 (64.03)
Additional profit from artisanal milling	-35.8%	4.6%	23.7%	**65.2%**	**49.6%**	**74%**	0.9%	28.2%

Source: Field survey 2012.

The mill owners are not left behind as they also benefit from milling charges paid by smallholders and middlemen alike who come to mill their FFB. All these advantages of artisanal milling are linked to the presence of a domestic and sub-regional market for red palm oil, despite the fluctuation in price depending on the season of production.

4.5.2 The shortcomings of artisanal milling

The quality of red palm oil processed in these artisanal mills has often raised a lot of questions. Previous studies reveal an increase in free fatty acid, moisture content and dirt on red palm oil when stringent quality control procedures are not put in place and this reduces the "shelf life" of red palm oil which can easily get rancid. Corley and Tinker (2003), Owolarafe et al. (2008) and Ngando et al. (2011) reported on the increase of free fatty acid concentration during the fermentation of fresh fruit bunches and Poku (2002) recommends the processing of FFB at 48 h after harvesting at the latest. The capacity and extraction rates of artisanal mills are much lower with an average of 14% (Cheyns and Rafflegeau, 2005) and thus they cannot compete with industrial mills, which are providing extraction rates of 23% and more and have higher milling capacity.

The dilapidated nature of some of the mills makes milling operations not sustainable because of frequent breakdowns, coupled with the recruitment of untrained personnel to manage the mills as reported by Akangbe et al. (2011) and Ibitoye et al. (2011). Okonkwo (2011) highlighted the need for mill personnel to receive training in order to ensure food safety and product quality. Another concern is the unhygienic conditions in which the milling operations are performed and the uncontrolled disposal of waste generated by such mills. Finally, from

the marketers' point of view, the red oil is subject to price fluctuation and high cost of transportation depending on the season of production (Ekine et al., 2006).

Different types of by-products are produced by the processing of fresh fruit bunches into red palm oil. These by-products are: empty fruit bunches, empty kernels, kernel cake, fibers and sludge. Such by-products are now increasingly recycled in industrial mills and they pose a threat to the environment when disposed of in an uncontrolled manner. For example, empty fruit bunches could be recycled to the field as a source of organic mulch or compost. Palm kernel can be used as a source of energy and the kernel cake could be a source of animal feed. Fibers are another important source of energy when used as fuel and palm oil mill effluent (POME) could also be an important source of organic manure, or could be captured to generate green electricity. But when POME is disposed of in an uncontrolled manner into nearby streams, it could be a source of pollution and a breeding ground for mosquitoes.

4.5.3 Agro-industrial companies want to get rid of artisanal mills

Plantation companies consider artisanal milling as detrimental to their business. Indeed, in many occasions they have asked the Government to forbid artisanal milling because they suspect the rampant theft of fresh fruit bunches in their plantations to be the result of artisanal milling. Company managers attests that peripheral plantations are the most affected because of theft. The theft of fresh fruit bunches from agro-industrial plantations occurs mostly at night and results not only in the loss of bunches from affected palm trees but also to unsustainable harvesting, as live fronds are often destroyed in order to easily cut the peduncle of the bunch with a cutlass. FFB theft is also predominant when harvested bunches that were supposed to be evacuated from farm gate to the mill are left to sleep overnight because of the absence of transportation logistics.

The local population complains that the company does not provide jobs and that they were expelled from land belonging to their fore-fathers. Thus, stealing and processing from the company is merely considered as compensation. The price of red palm oil produced by artisanal mills is not submitted to any regulation by the government, while the price of crude palm oil produced by agro-industries is presently fixed at 450 FCFA (0.69 €)/ kg to avoid the closure of downstream industries. When asked to increase FFB buying prices, company managers respond that because of the fixed CPO price they would go bankrupt. As an adaptive response to the increase of theft of FFB in agro-industrial plantations, the companies have hired the services of security officials/guards to carry out regular patrols on their plantation with eminent court action on defaulters. The transportation of palm oil in areas

where these agro-industries are located is subject to strict control by security officials/guards in order to ascertain the source of the palm oil. In the worst cases, the company decides the replacement of oil palm with other crops like banana and rubber in peripheral plantations which face high levels of theft as noticed in CDC Mondoni palms and SOCAPALM Nkappa.

4.5.4 Which way forward?

One of the possible ways forward would be for oil palm smallholders/artisanal millers to group themselves into cooperatives in order to increase their bargaining power (Jelsma et al., 2009; Ibitoye et al., 2011). At present, smallholders process and sell the red palm oil individually without a common price at a particular season of production. They are not informed about improved sustainable processing methods, market strategies or market information systems. There is also a need to improve on the extraction rates and quality control procedures of artisanal mills (Badmus, 1991). Partnerships between smallholders and agro-industrial companies should be facilitated by the Government, especially with the recent interest shown by foreign oil palm companies to develop plantations in Cameroon (Levang and Nkongho, 2012; Hoyle and Levang, 2012; Nkongho et al., 2014).

The round table on sustainable palm oil (RSPO) emphasizes the need for the certification of independent oil palm smallholders under group certification and the certification of scheme oil palm smallholders through the agro-industries in which they are in partnership. Group certification of independent oil palm smallholders and their respective artisanal mills will involve the grouping of these smallholders/artisanal millers into cooperatives and the training of both smallholders and artisanal millers on the principles and criteria of RSPO. Smallholders would gain knowledge on the identification and delimitation of High Conservation Value Forest (HCVF), primary forest and peat land, etc. Techniques that minimize soil erosion would be adopted where appropriate. These include practices such as ground cover management, biomass recycling, terracing, and natural regeneration or restoration; knowledge on best management practices such as integrated pest management (IPM) (incorporating cultural, biological, mechanical and physical methods to minimize the use of chemicals), the health and safety of plantation workers, updated and efficient fertilization, as well as farm record keeping.

At the level of artisanal mills, workers should receive training on safety and product quality, as well as ways of disposing solid and liquid waste with little effect on the soil and water ways, amongst others. A water management plan should be put in place and this should take account of the efficiency of use and renewability of sources, ensuring that the use and

management of water during milling operations does not result in adverse impacts on other users within the catchment area. The treatment of palm oil mill effluent (POME) to required levels and regular monitoring of discharge quality especially biochemical oxygen demand (BOD), should be in compliance with national regulation. The adherence to RSPO certification and others would also open new doors for funding and market opportunities (RSPO, 2013).

4.6 CONCLUSION

Our study identified six different types of artisanal mills commonly used in the four study zones. In terms of milling efficiency semi-automated mills showed the best milling efficiency, with the poorest performance coming from manual presses. Different categories of millers and users were identified, namely mill owners, mill managers, oil palm smallholders, and middlemen. All categories were able to make a sizeable profit from their activity in the processing and marketing of red palm oil. Oil palm smallholders were found to mill part of their FFB and sell part of it to agro-industrial companies depending on the size of their farms and the season of production, while middlemen were able to mill and store red palm oil until the selling price became more profitable.

Nevertheless, artisanal milling has its own setbacks. These include low extraction efficiency, old, unsafe and dilapidated mills, the absence of quality control procedures, fluctuations in the price of red palm oil for those involved in marketing and the worrying increase in theft of bunches from agro-industrial plantations. Our study finally highlights a need for improvement in the extraction efficiency and quality control measures in these mills, the need for millers and marketers to group themselves into cooperatives, and the need for developing partnerships between oil palm smallholders and agro-industries.

5 CHAPTER FIVE

WIN-WIN PARTNERSHIP BETWEEN AGRO-INDUSTRIES AND OIL PALM SMALLHOLDERS. LESSONS FROM SOUTHEAST ASIAN EXPERIENCES

5.1 ABSTRACT

The limitations of the FONADER scheme in Cameroon before its collapse in 1990 and the challenges currently faced by oil palm smallholders in particular and the oil palm sector in general, prompted the carrying out of the present case studies on Malaysian and Indonesian partnerships in the oil palm sector. The production of palm oil in Cameroon is presently undermined by major problems. In the smallholder sector, very low yields of less than 1 t CPO/ha/year are recorded, together with poor access to selected planting material, inputs and credits from financial institutions, thus reflecting the absence of win-win and equitable partnerships linking smallholders and agro-industries. In the agro-industrial sector, a decrease in FFB supply to feed the mills during low production season is recorded, together with the emergence of social and environmental crises with the local population / NGOs with respect to land issues and pollution problems as well as FFB theft and competition with artisanal milling. The installation of new companies wanting to develop oil palm plantations has also put the government into confusion as no strategy has been put in place for the sustainable development of the sector. In Southeast Asia, Malaysia and Indonesia taken together produce 87% of total world CPO with almost 40% of oil palm planted area and production in the hands of smallholders. In these two countries, scheme smallholders register better yields- on average 3.5 to 4 t CPO/ha/year. The present chapter provides a case study of 3 major national oil palm schemes in the region, namely FELDA scheme at Besout in Malaysia, the PIR trans/local and later KKPA scheme from PT SAL in Indonesia and the KKPA scheme from Megasawindo and Musim Mas in Sumatra (Indonesia). Such schemes are able to provide important information to decision makers in the quest for sustainability in the oil palm sector.

Key words: FONADER/ FELDA/ PIR trans-local/ KKPA/ Smallholders/ Agro-industries

5.2 INTRODUCTION

The oil palm (*Elæis guineensis* Jacq.) originates from the gulf of Guinea. Palm oil production started with the harvesting of wild oil palm groves through agro-forestry systems then evolved towards industrialization. Until the 1960s and early 1970s, Africa was topping the chart for crude palm oil (CPO) production and export. But Africa did not enjoy this pole position for too long as the production became plagued with natural factors like pests and diseases, a dry spell of four or more months within the year, little progress in research and plantation management and political instability in some countries (Ndjogui et al., 2014; Nkongho et al., 2015).

In Cameroon, the government first designed a partnership strategy aimed at associating agro-industry and smallholders in 1978 in order to boost productivity, create employment and reduce poverty. Unfortunately this scheme did not last long, as the government had to cope with an economic crisis, the devaluation of the Franc CFA and structural adjustment programs which occurred between the late 1980s and early 1990s. These major challenges forced the government to stop supporting the rural sector through the FONADER fund (National Fund

for Agriculture and Rural Development), a rural bank which was aimed at supporting projects geared towards agriculture and rural development. Since that time, oil palm smallholders and agro-industries have been operating independently and any relationship between the two is a matter of convenience. Because of this parallel in co-existence, smallholders plantations show very poor yields (0.8 t CPO/ha/yr) while Indonesian and Malaysian scheme smallholders are able to produce 3.5 to 4 t CPO/ha/yr respectively (Hoyle and Levang, 2012; Nkongho et al., 2014; Ndjogui et al., 2014).

In Southeast Asia, notably in Malaysia and Indonesia, similar schemes were initiated and supported by Governments with funding assistance from the World Bank with the aim of reducing poverty for the rural masses (Cramb and Curry, 2012). In Malaysia, the FELDA (Federal Land Development Authority) was founded in 1956 as a funding agency for the country's agricultural projects (Chan-Onn, 1985; Hamid and Henley, 2008; Adnan, 2013). By the 1960s, the Malaysian government decided to give to FELDA the power of implementing agricultural development projects (Fold, 2000). FELDA began with the plantation of rubber trees in its earlier schemes but when rubber prices fell due to competition with synthetic rubber, the Malaysian government through FELDA decided to diversify production through the cultivation of oil palm in its newer schemes in the 1960s and afterwards (Fold, 2000; Simeh and Ahmad, 2001). Apart from oil palm and rubber, other crops cultivated by FELDA settlers on a smaller scale included cocoa, coffee, and sugarcane. People without access to land or having land not attaining an economic scale (Land that will not generate sufficient income for the farmer if put into use), were given priority in accessing the FELDA scheme. Selected settlers were relocated in a FELDA scheme village out of their village of origin. They were provided with a house, a 4 ha plot planted with either oil palm or rubber, and a 0.25 ha plot for food crop production. Settlers were asked to provide labor on their plots. Apart from the above mentioned facilities, other government departments like the security post, schools, hospitals, etc.were also installed in the scheme village to cater for the settlers. The total development cost of the house and 4 ha plot had to be reimbursed with a 6% interest rate over 15 years. Apart from research on agronomy, breeding, seed production and plantation management, the Malaysian government also invested in the development of downstream industries, in order to add more value to the product. Apart from FELDA, other institutions contributed to agricultural development such as FELCRA (Federal Land Consolidation and Rehabilitation Agency), RISDA (Rubber Institute Smallholder Development Agency), SLDB (Sabah Land Development Board) or Sarawak Land Development Board (Chin, 2011; Cramb and Curry, 2012).

In Indonesia, following the example from the Malaysian FELDA, the government decided to develop the PIR ('Perkebunan Inti Rakyat' or Nucleus Estate and Smallholder Plantations) under the framework of the Transmigration program (Levang, 1995). The Indonesian transmigration is a continuation of the Dutch *Kolonisatie* programme which started in 1905. At the beginning, the Indonesian government focused on rice cultivation then shifted to rubber and oil palm in the 1980s, once rice self-subsistence was achieved again. The transmigration scheme involved the relocation of voluntary landless households from the over-crowded islands of Bali, Java and Lombok to the outer islands of Sumatra, Sulawesi and Kalimantan (Levang, 1995; Feintrenie, 2013). Transmigrant farmers were given 2-ha plots planted with oil palm or rubber, a house and a 0.25 ha plot for food crops. The loan allocated for the development and maintenance of the 2 ha plot during the immature period was to be repaid within 6 years with an interest rate of 12%, and the land partitioning for the *nucleus* estate and *plasma* plantations was 20-30 : 80-70 in favor of the transmigrants (McCarthy, 2010; Gillespie, 2011; Gillespie, 2012). These transmigrants were also asked to provide cheap labor to the agro-industries. The transmigrants created a cooperative at the level of each transmigration village called *Koperasi Unit Desa* (KUD). The Indonesian government was supported by funding institutions like the World Bank until the end of the 1980s. The PIR scheme also recorded a limited participation of native populations. When the Indonesian government was faced with the Asian economic crisis, the government then decided to change the mode of development and designed newer schemes such as the KKPA (*Koperasi Kredit Primer untuk Anggota* or Primary Cooperative Credit for Members) (McCarthy, 2010). In the KKPA scheme, the Indonesian government decided to act as a regulator and gave priority to the local population in the aim of preventing social conflicts between local and transmigrant populations as it happened sometimes during the PIR era (Fortin, 2011). Under KKPA scheme, land holders donate a certain quantity of land to the agro-industry for the development of the *nucleus* estate and *plasma* plantations. The farmers then group themselves in a cooperative which is supposed to work hand in hand with the agro-industry for the management of the plasma plot. The ratio of land partitioning between agro-industries and KKPA farmers is more often 70% for the agro-industry and 30% for the KKPA farmers (Feintrenie and Rafflegeau, 2012). Newer *Kemitraan* schemes stipulate that at least 20% of the total land developed by the agro-industry should be set aside for smallholder plantations (Gillespie, 2010; McCarthy et al., 2012). With the advent of decentralization policies in 1999, power has been handed down to the district governments. As a result, authorities at the district

level have been very instrumental in mediating company-smallholder partnerships (Gillespie, 2011).

Thanks partly to the development of such schemes, Indonesia and Malaysia have become the largest producers and exporters of CPO in the world with 87% of the world's total production in 2012 (Cramb and Curry, 2012). Today, the area under oil palm controlled by the smallholder sector stands at 40%, thanks to various schemes which were implemented over the years (Cramb and Curry, 2012; Feintrenie, 2013; Paoli et al., 2014). Under the pressure of conservation NGOs and the civil society, various sustainability standards emerged: from voluntary organizations like RSPO (RoundTable for Sustainable Palm Oil), from government regulations like ISPO (Indonesian Sustainable Palm Oil), or directives like RED (Renewable Energy Directive) requiring that biofuels consumed in European Union countries meet sustainability standards. The moratorium signed between Norway and the Indonesian government to stop the development of oil palm on primary forest and peat land, REDD+ (Reduction of Emissions from Deforestation and Degradation) projects, as well as increased social and environmental awareness have limited the expansion of the oil palm industry in SE-Asia in recent years (Fortin, 2011; McCarthy et al., 2011; Feintrenie and Rafflegeau, 2012; Obidzinsky et al., 2012; Feintrenie, 2013).

Today, palm oil production in Cameroon is hampered by very low yields and the importation of CPO from the major producing countries has been on the rise (Nkongho et al., 2014). In recent years, several agro-industrial companies have expressed their interest in investing in humid tropical Africa and Cameroon in particular to develop large-scale oil palm plantations (Hoyle and Levang, 2012).Which model should be used to develop the oil palm industry in Cameroon? In order to help in answering this question, our study was aimed at analyzing several partnership models developed in Malaysia and Indonesia which included FELDA, PIR and KKPA schemes. It is expected that lessons learnt from the different palm oil models developed in Southeast Asia would contribute to the development of a sustainable model for the oil palm sector in Cameroon.

The objective of this work was to study the pros and cons of various partnership schemes implemented in Southeast Asia over the years, notably the FELDA scheme in Malaysia and the PIR and KKPA schemes in Indonesia. The field work is backed by an extensive literature review about these partnership schemes and other partnership schemes and alliances that have been tested in the oil palm sector.

5.3 METHODOLOGY

Malaysia:

The FELDA scheme in Malaysia is considered as a success story by many authors (Sutton, 1989; Fold, 2000; Cramb and Curry, 2012). It has been proposed that the success of FELDA prompted the Indonesian government to develop the oil palm transmigration scheme in the 1980s (Sutton, 1989; Zen et al., 2010).

A field survey was carried out in Besout, sub-district of Sungkai, the district of Batang Padang, in the State of Perak- Malaysia, in November 2013. FELDA Gunung Besout 1 to 7 is a scheme that was developed between 1974 and 1988. Besout 1 to 5 are run by settler, while Besout 6 and 7, is a large estate planting. Questions about the functioning of FELDA schemes were asked to management staffs at FELDA head office in Kuala Lumpur. We also interviewed other stakeholders in Besout 1 scheme village including; the scheme manager, the mill manager, the replanting manager, the scheme management committee (JKKR), the scheme cooperative, the women's group, youth group, social development officer, entrepreneur development department, and individual settlers. Our field survey of FELDA scheme was unfortunately very short given the limited time the researcher was authorized to stay in Malaysia. Due to controversies about the oil palm sector on the environmental and social front in recent times, it has not always been easy for students/researchers to conduct research in the premises of oil palm companies.

Indonesia:

Three different schemes associating oil palm agro-industries and smallholders were selected in Indonesia. PT. SAL and Megasawindo are located in the sub-district of Pelepat, Bungo district, in the Jambi province of Sumatra. Compared with Megasawindo which comprises both a *nucleus* estate for the agro-industry and plasma plantations for the KKPA farmers, PT. SAL owns only a mill with no estate plantation and the production of palm oil relies on FFB supplied by smallholders under contract. Indeed, PT SAL entered into an agreement with smallholders during the days of the PIR-Trans scheme in the 1980s and later the KKPA scheme in the 1990s, with essentially transmigrant smallholders. The situation is different for the KKPA of Megasawindo which began in the late 1990s; this scheme deals essentially with the native population.

Data on the partnership scheme between PT. SAL and KUD Karya Mukti were collected at the cooperative level only, because the access to PT. SAL was not possible without prior authorization from their head office. PT. SAL and Megasawindo are not certified by the Roundtable for Sustainable Palm Oil (RSPO) or the Indonesian Sustainable Palm Oil (ISPO) standards. This makes a major difference with Musim Mas Sorek, which is both RSPO and ISPO-certified. It is worth mentioning that RSPO certification covers not only the agro-industrial estate, but also the KKPA farmer's plots.

Field research was carried out at PT SAL and Megasawindo with both transmigrant and native farmers, in the sub-district of Pelepat, district of Bungo, Jambi province, between December 2012 and December 2013. The objective of our study was to understand the functioning of the PIR Trans and KKPA schemes linking PT. SAL and the *plasma* farmers of Karya Mukti cooperative, the functioning of KKPA contract between PT. Megasawindo and farmers of the Muara Kuamang cooperative as well as the dynamics of the different oil palm production systems operating in the sub-district.

The study focused on the collection of qualitative and secondary data from the different stakeholders involved in oil palm production in the area. A total of 75 respondents were sampled and the distribution of sampled population was as follows: In the *Dinas Kehutanan dan Perkebunan*, 3 persons were interviewed which included the head of sector for the development of plantation production, the head of sector for the development of plantation infrastructure, and the head of sector for the development of resources and business. Our aim was to understand the role of *Dinas Kehutanan dan Perkebunan* and the various company/smallholder schemes that were put in place by the Government.

In the Karya Mukti cooperative, we had a general discussion about the contract between PT. SAL and this cooperative with 10 members of the cooperative including the president, the treasurer, 2 heads of group and 6 *plasma* farmers, located in units 17, 18 and 19 of Kuamang Kuning village. Our discussions focused on the mechanism of the PIR Trans and KKPA schemes with PT. SAL and on the limitations observed when the scheme was implemented in the field. The two schemes (PIR Trans and KKPA) were essentially made up of transmigrants as the original *plasma* farmers.

In PT. Megasawindo, semi-guided interviews were conducted with 5 top company managers, which comprised the senior estate manager, the public relations officer, the head of administration, the field manager, as well as the mill manager and 7 company workers

including secretaries, mill workers and field workers. Questions asked to top managers were as follows: description of the different legal obligations before land acquisition and the further establishment of the company, the type of management put in place by the company to manage the *nucleus* estate (*inti*), a detailed description of the management put in place for the KKPA scheme between company and *plasma* cooperative, as well as the identification of difficulties observed during the field implementation of the contract.

Questions asked to all categories of company workers were linked to the benefits they get as workers in terms of salary and other allowances, social security, housing conditions, electricity supply, the quality of drinking water, sanitary conditions as well as safety measures put in place by the company.

The office of KKPA farmers is located in Muara Kuamang village. A total of 40 respondents were sampled, with an average of 7 *plasma* farmers per village. The distribution of sampled population was as follows: 3 management staff of the cooperative were interviewed including the president, the secretary, and the treasurer. A total of 10 heads of group and 27 *plasma* farmers were also sampled, distributed amongst the five villages involved in the KKPA scheme with PT Megasawindo as shown in Table 20. These villages included: Muara Kuamang, Dusun Danau, Sungai Gurun, Rantau Keloyang, and Dwi Karya Bakti. With the exception of Dwi Karya Bakti which is made up of spontaneous migrants, the other villages were essentially composed of native (or local) population as the original *plasma* farmers involved in the scheme. Questions asked to the cooperative management and *plasma* farmers related to the composition and organization of the cooperative, a detailed description of the contract between the KKPA farmers and the company, some of the lapses observed in the implementation of this contract as well as the different options of *plasma* management.

A total of 5 independent smallholders and 5 middlemen were also interviewed in Muara Kuamang, Kuamang Kuning (unit 18) and Kutojayo villages. Lastly we were also interested in the different production systems established by the different types of oil palm producers in the sub-district, which included the company, scheme smallholders attached either to the PIR or the KKPA scheme, semi-independent smallholders, and independent smallholders.

The field survey for PT. Musim Mas in the sub-district of Sorek, Pelalawan district, in Riau province was also carried out between December 2012 and 2013. The field survey involved semi-guided questions, focus group discussions, secondary data sourcing and field observations. A total of 70 respondents were interviewed which included: 3 district officials, 7

company managers, 5 company workers, 6 management staffs from both KKPA North and South cooperative, 7 heads of group, 27 KKPA farmers, 10 independent oil palm smallholders and 5 middlemen/agents. A summary of the sampled population is given in Table 20. The studied sites in Malaysia and Indonesia are described in Figure 9.

Table 20 : Total number of respondents sampled during the survey

District	Sub-district	Different stakeholders sampled						Total
		Dinas	Agro-industry	KKPA farmers	KUD Karya Mukti	Independent smallholders	Middle men	
Bungo	Pelapat	03	12	40	10	05	05	**75**
Pelalawan	Sorek	03	12	40	-	10	05	**70**
Total		06	24	80	10	15	10	**145**

Source: 2012-2013 field work

Figure 9: Localisation of the study sites in Indonesia and Malaysia.

5.4 RESULTS

This section describes four different case studies, namely the FELDA scheme of Besout in Malaysia, the PIR-trans and later the KKPA scheme of PT. SAL, the KKPA scheme of PT. Megasawindo and lastly the KKPA scheme of PT. Musim Mas in Sorek.

5.4.1 Case 1: The FELDA scheme in Besout, Malaysia

FELDA plantation area in 2005 was as follows: oil palm: 702,932 ha, rubber: 102,082 ha, sugarcane: 3,998 ha and others 2,128 ha. After 2005, no major expansion of plantation surface areas has been possible, since the development of newer schemes had already ended.

From 702,932 ha of oil palm, 1/3 of the surface area is managed by FELDA estates, while the remainder is cultivated by settlers. Settlers needed to repay their loan before 15 years. At the time of our study, about 70% of the settlers had already received their land titles. A total of 17 out of the 71 extraction mills are RSPO-certified. One third of the FFB processed by FELDA mills comes from FELDA plantations, 1/3 comes from the settlers scheme and the remaining 1/3 comes from independent smallholders. The FELDA scheme illustrates the switch from rubber to oil palm due to global price fluctuations. Players in the palm oil industry in Malaysia include: FELDA, other public companies, private companies and independent smallholders. The management system established by FELDA started with the individual system of plot management, then it was changed to a system of management based on blocks, then to a shared system of management and then it went back to management by blocks following complains from settlers about the absence of land ownership in the shared system. Following the 1960 Group Settlement Act (GSA), settlers are not allowed to sell, sub-divide or rent their plots, their house and to sell FFB from their plots to other parties (Ghee and Dorall, 1992; Chin, 2011). The payment for FFB supplied to the mill follows a price fixed by the Malaysian Palm Oil Board (MPOB). Settlers also own shares from the FELDA Investment Cooperative known as "*Kooperasi Permodalan FELDA*" (KPF). Most of the settlers in the Besout scheme come from Perak State. The replanting of the old palms took place after 25 years. Today most of the second generation of FELDA settlers -mostly the young people- are not willing to work in the field and they prefer either to study or to look for semi-skilled and skilled jobs. As a result, the scheme managers now rely mostly on foreign labor. The settlers' income comes from the sale of FFB produced in their plots, the owning of shares at the KPF and from some entrepreneurial activities. Settlers own 51% of KPF shares and get dividends of 15% from the profit made by subsidiary companies of FELDA at the end

of each year. The settler's shares in KPF come from the deductions that were made when settlers supplied their FFB to FELDA mill during the first cycle of their plantation. Sources of income for the settler during the 1st cycle of oil palm included wages for work done on the block, income from FFB originating from his block, subsidies for children's education, savings at scheme cooperative and savings under KPF to become a shareholder.

Scheme development committee (JKKR): This group is more dedicated to the social and economic development of the village under scheme rather than to plantation management in the Besout FELDA scheme. This committee ascertains that there is peace and harmony in the village. The scheme manager is the chairman of this committee, while an elected block leader is the assistant chairman. Each settler is supposed to pay 10 MYR (2.32€)/month; 5 MYR (1.16€)/month is for the management of the JKKR and the remaining 5 MYR (1.16€)/month are used for the embellishment of the village. FELDA -through the office of the scheme manager- will tap another 10 MYR (2.32€)/household in order to support JKKR management and the village embellishment. Each year a contest is organized amongst villages and a prize is offerred to the most beautiful village under scheme. Also JKKR has the power to make proposals to the federal government through elected representatives of the scheme committee at the regional and federal level on matters related to education, health, security, etc.

Note: In 1974, a contract was signed between FELDA and the settlers of Besout 1. The development cost for housing and 4 ha of oil palm plots including 3 years of maintenance by FELDA stood at 30,000 MYR (6948.3 €) and this sum was to be refunded within 15 years with an interest rate of 6% as the palms entered into maturity. The 30,000 MYR (6948.3 €) sum includes the main credit plus interest. After the completion of re-imbursement of the loan plus interest (i.e. 6%), the settler is then given a land certificate. After the first 25-years contract, the settler can enter into a new contract with FELDA, or go ahead and carry out the replanting by himself. If the settler goes in for another contract with FELDA, then a FELDA subsidiary (FELDA Technoplant) will be in charge of the replanting and management of the plot.

In the past, when some settlers refused to sell their bunches to the mill, their contracts were terminated and they were excluded from the village under scheme. Now that a majority of settlers have completed the repayment of their credit and own a land certificate, they are still supposed to supply their FFB to a FELDA mill. If they do not do so, they will not benefit

from yearly bonus, child education and housing loan. As already mentioned, the 1960 Group Settlement Act (GSA) forbids a settler from selling his FFB out of FELDA mills, to sell his oil palm plot to another person or to sell his house. Only the Malaysian government is authorized to buy the plot and house if the need arises. Some recalcitrant settlers who knew they have not completed the payment of their credit will prefer to supply their FFB to a friend who has completed the payment of his loan in order to avoid penalties at the mill. If the settler is able to supply 40 t FFB/year to the FELDA mill, he gets a yearly bonus of 400 MYR (92.64 €). The settlers in Besout scheme originate not only from Perak state, but also from neighboring states like Selangor or Kedar.

Scheme cooperative: The cooperative in Besout 1 was created in 1984 with 520 members. The original aim was not to manage the settlers' plots, but off-farm economic activities. Presently, contracts are given to the cooperative by FELDA-Technoplant for the harvesting and delivery of FFB to the mill. The cooperative sub-contracts FFB transportation job to members who own trucks. There are also members of the cooperative who are managing their replanted plots. The scheme cooperative also owns a petrol station and a financial institution caring for settlers' savings. Contract for field maintenance used to be awarded by the scheme management committee to the cooperative in the past, but today, it is the duty of FELDA Technoplant. All the settlers are members of the cooperative. The role of the cooperative is very important, especially with the fading out of the older generation of settlers and the arrival of a younger generation, of non-resident in the area because of educational purpose or the search for "white collar" jobs, the scheme management committee then suggested to the settlers to group themselves into cooperative. Presently the cooperative is in charge of managing some operations of the plots upon the release of contracts from the FELDA Technoplant. Some of the advantages of being a member of the scheme cooperative reside in the possibility of saving money with a 10% profit. The scheme cooperative has saved a sum of 250,000 MYR (57902.54€) as shares in KPF and it is able to distribute a yearly dividend to the cooperative members. Members of the scheme cooperative are also supposed to save in the cooperative coffers a minimum of 200 MYR (46.32€)/year. Presently most of the laborers that work in settlers' plots come from outside Malaysia (i.e. Indonesia, Bangladesh or Nepal). The profit made by the cooperative is shared between all the settlers who form part of the cooperative.

The role of the mosque is basically to build up the scheme community through the religious aspect of their life. The mosque also provides religious classes especially to the younger

generation. The women group is the backbone of JKKR in terms of family unity. The women group is also a mediator when some families face problems. In fact, it is a forum for women which enables them to discuss about some of the challenges they face either at home or in their day to day life. Just like the JKKR, they also have a representative at the regional level. The main role of the youth group is to act as a back-up for the JKKR and the women group. The youth group also organizes a lot of sporting activities especially during the holidays. It is important to note that the FELDA social development officer in the scheme area works hand in hand with these groups and also channels crucial issues to FELDA hierarchy through the scheme manager. The school fees of settlers' children are subsidized by FELDA from pre-nursery-school to university.

FELDA-Technoplant started in 2000 as a subsidiary of FELDA research and development (R&D) called the replanting committee. In 2005, it was separated from FELDA R&D and given full autonomy with its own general manager, managers and supervisors. FELDA-Technoplant manages the replanted plots of the settlers who have signed a new contract. It also attributes contract to the scheme cooperative, and in situations where the cooperative cannot provide the service at the appropriate time, the contract is open. The cooperative has its own workforce, while FELDA-Technoplant also has its own workforce. According to the manager for FELDA-Technoplant in Besout, half of the operations in the field are undertaken by the cooperative while the rest is implemented by FELDA-Technoplant. Table 21 shows the cost of the different operations for the 1st and 2nd cycle plantations.

Table 21: Average cost of different operations for 1st and 2nd cycle plantations.

Operational cost	**1st cycle plantation cost (in MYR)**	**2nd cycle plantation cost (in MYR)**
Loan repayment	170 MYR (39.37 €)/month	-
Replanting saving	21,000 MYR (4863.81€)/4ha	-
Weeding	-	569 MYR (131.79€)/4ha/yr
FFB transportation (Including loading and offloading of FFB)	18 MYR (4.17 €)/ton	23 MYR (5.33€)/ton
Harvesting plus picking of loose fruit	-	33 to 40 MYR (7.64 to 9.26€)/ton
Purchase of different brands of fertilizer	130 MYR (30.11 €)/month	6,318 MYR (1463.31€)/4ha/yr
Fertilizer application cost	-	2.2 MYR (0.51€)/bag of 50 kg (labour cost)
Pruning	-	35 MYR (8.11€)/ha (or 25

		cent/palm)
Road maintenance	10 MYR (2.32 €)/month	30 MYR (6.95€)/month
Plot insurance	8 MYR (1.85 €)/month	-
Deduction for shares at KPF	200 MYR (46.32 €)/month	-
Management of JKKR	5 MYR (1.16 €)/month	5 MYR (1.16€)/month
Embellishment of scheme village	5 MYR (1.16 €)/month	5 MYR (1.16€)/month

*NB: A hectare holds 136 palms; during the 1st cycle of oil palm plantings, FELDA took the responsibility of providing a vehicle to transport FFB from the settlers plot to the mill.

The workers hired by both FELDA-Technoplant and the cooperative are all temporary workers who sign a contract for a maximum period of 5 years. After this period they are supposed to go back to their country, before they can come back again into Malaysia. Two methods are followed for plot management of replanted palms. The first method is when the settler does the replanting and management of his plot himself and only seeks technical advice from FELDA. Settlers who have decided to manage their plots by themselves more often decide to carry out the replanting of their plots under older oil palm stands. When the young replants start to yield bunches, the old stands are poisoned with herbicides. The positive side of this method is that the replanting is less expensive, and this method also enables the settler to continue to benefit from the FFB harvest from old palms until when the young palms begin to produce bunches. On the negative side, the old palms may serve as host for the transmission of pathogens to the younger palms. In the second case, FELDA-Technoplant does the replanting for the settler and further continues with the management of the plot depending on the choice of the settler. For the settlers who have subcontracted Technoplant in order to replant and manage their plots, they have to sign a contract for 3 years after which they may decide to manage their plantations themselves or sign another contract allowing FELDA Technoplant to continue with the management for the complete cycle of 25 years. The benefit of this new partnership is that the settler will be able to plant a clonal variety-Yangambi palms. This new variety has the potential to get mature after 2.6 years. Apart from this, the settler will be able to get efficient fertilization of his plot through the expertise of FELDA-Technoplant. The present replanting contract runs for 3 years (36 months). It is expected that within this period, the replanted palms would have entered into production. Within this period of 3 years, settlers may collect a subsistence allowance of about 36,000 to 40,000 MYR (8337.97 to 9264.41€). This money has to be paid back to FELDA as soon as the palms enter into production through progressive deduction from the supply of FFB to the

mill. But this request from FELDA to the settlers is not mandatory, as we still find some settlers who prefer not to collect this subsistence allowance from FELDA. It is important to note that 17,000 MYR (3937.37€) that was collected from the settler during the previous cycle of the plantation as replanting saving is what FELDA-Technoplant is using to fund the replanting of the settler's plot. The total replanting and maintenance cost for the 4 ha- plot is 24,000 MYR (5558.64€). As a result, FELDA has decided that they will pay the additional cost of 7,000 MYR (1621.27€), but according to the settlers, in the agreement with FELDA, it is not mentioned whether Technoplant will recover this money or not. According to the manager for FELDA-Technoplant, Besout 1 has a total of 520 settlers and from this number, 315 settlers' plots are managed by FELDA-Technoplant, while the remaining 205 settlers have decided to replant and manage their plots by themselves, with technical advice from FELDA. Settlers whose replantings are managed by FELDA Technoplant on average yield 26 tons FFB/ha/yr from mature palms. Presently the block system of plot management is limited to the social aspects of the day to day living of the settlers. In the past, the block system of management was extended to the management of the oil palm plots, which is no longer the case now. In the past, settlers had make a group of 20 in order to manage a block of 80 ha. They needed to elect a block leader and to undertake all the activities in the block simultaneously, based on technical information handed down to them by field supervisors from FELDA. FFB coming from their block was sold to FELDA mill and the net income was shared amongst settlers.

On average mature plantings need a minimum fertilizer dose of 8 kg/palm/yr in Malaysia. In this district, the fluctuation in production for peak and low season is not so pronounced, with the months April to May experiencing a reduction in rainfall when compared to the other months of the year.

FELDA Global Venture is the subsidiary of FELDA responsible for the management of estate planting owned by FELDA. The profit is used for social development of settlers through schools, hospitals, etc. Palms planted in the estate part of the site are presently 23 to 25 years old with a yield of 18 to 20 tons FFB/ha/yr. In terms of salaries, managers can earn between 6000 to 10,000 MYR (1389.66 to 2316.1€)/month, while the laborers earn between 900 to 2000 MYR (208.45 to 463.22€)/month.

FELDA Palm Industry (the mill) is responsible for the processing of FFB provided by settlers' plots, FELDA estates and other independent sources. The internal sources of FFB for

the mill include: FELDA-Technoplant, FELDA Global Ventures and individual settlers under FELDA, while external FFB comes from dealers, outside estate, and independent oil palm smallholders. FELDA is made up of 72 extraction mills, with 60 mills located in Peninsular Malaysia, 11 in Sabah and 1 in Sarawak, with a total capacity of 65,000 metric ton/day.The Besout mill was constructed in October 1981 and it has a capacity of 54 metric ton/hr.

FELDA Agriculture (Research & Development) is responsible to carry out research in the fields of agronomy, breeding, pathology, etc. The seeds produced by the research department are sold as follows: "Yangambi" = 8 MYR (1.85€)/seed, while a "normal" seedling (12 months old) is sold at 12 to 17 MYR (2.78 to 3.94€). In terms of price per ton of FFB, "Yangambi" is sold at 520 MYR (120.44€)/ ton FFB, while the FFB from "normal" seedling is sold at 400 MYR (92.64€)/ton FFB.

Under the Prime Minister's office, there is a department called *Seranta* in charge of supervising activities between FELDA and settlers. When settlers got much income from their oil palm plot, they will buy land in the village outside the scheme and plant oil palms. On average, settlers are able to harvest 26 tons FFB/ha/yr from mature palms and this is mainly for settlers whose plantings are managed by FELDA-Technoplant.

Settlers who are managing their plots by themselves must also make sure that they can transport their FFB to FELDA mill in Besout. Within the scheme area some of the settlers own vehicles or trucks which are used by other settlers upon payment of about MYR 40 (9.26€)/ton for the loading, transportation and off-loading of FFB from the farm to mill gate, depending also on the distance of the plot to the mill. In a situation where other mills owned by private companies are around, settlers may be tempted to supply their FFB to these mills for a better price. But this is not the case of FELDA scheme in Besout, where the plots of settlers are much closer to the Besout mill. The mill at Besout is still to be RSPO-certified and FELDA has planned that by 2017 all its mills would be RSPO-certified. About 30% of FFB comes from external suppliers, while the remaining 70% comes from the various other FELDA plantations.

Determining FFB price paid to settlers: MPOB fixes the price of FFB, taking into consideration the world price of CPO, the variety of planting material, the age of the palms and the industrial extraction rate of the mill. In Malaysia, when the price of a ton of CPO in the world market falls below a certain limit within which farmers cannot get a minimum net income of 400 MYR (92.64€)/t FFB supplied to the mill, CPO produced in Malaysia, rather

than being exported, is sold to bio-energy producing plants. When the price of CPO rises in the international market, priority is given to the export of CPO.

The price of CPO is based on the price in the international market, while the monetary value for the expected oil extraction rate (EOER) for 1% is determined by MPOB. OER depends on the average bunch weight of FFB, the variety of the planting material and the quality control procedures put in place at the mill. A FELDA team at the mill is in charge of quality control of FFB from settlers' plots. The maximum OER for the mill in the scheme area is 20.5%.

Gross income from FFB = 1% OER (determined by MPOB) × grading extraction rate (determined at mill) × total tons of FFB supplied. OER depends on bunch weight as shown below;

- With less than 5 kg bunch weight; OER is 17.5%.
- Between 5 to 10 kg bunch weight; OER starts at 18.5%.
- Between 10 to 25 kg bunch weight; OER starts at 19.75%.

These three cases are for "normal" FFB, while for FFB coming from clonal oil palms, standard OER for 10-to 25 kg bunches is 20.5%. The genetic origin of planting material is the first criterion that is taken into account before the quality of the FFB is checked.

The average processing cost of one ton of FFB at the Besout mill was 34.88 MYR (8.08€) in 2012. The payment of FFB supplied from settlers' plots to the mill is done on a weekly basis at the respective scheme offices, while for external suppliers, the mill pays directly 2 times a month . Settlers benefit only for the FFB supplied to the mill, though the price given by MPOB includes both CPO and PKO. FELDA also has refining companies which further process CPO produced at the mill.

5.4.2 Case 2: PT SAL and KUD Karya Mukti

The KUD Kuamang Kuning was established in 1986 by the transmigrant population of the area. Kuamang Kuning village is composed of unit 1 to unit 19 transmigration settlement areas. The first contingent of transmigrants arrived in the area in 1983 and the last one debarked in 1985. When people arrived in the area, the government had already partitioned the area into large units of approximately 500 households (HH). Each HH was given 3 plots: housing:1/4 ha, land for food crops: 3/4 ha (rice, cassava or corn) and an additional area of 2 ha that was eventually used for the development of oil palm (McCarthy and Cramb, 2008). The government handed these plots to the transmigrant population. During the first year, the Indonesian government subsidized settlers through the provision of food. The purpose of establishing the KUD Karya Mukti cooperative was basically for economic reasons (settlers could save and borrow money through the cooperative and the cooperative was also responsible for processing rice for its members). In 1991, the PIR Trans scheme began upon the request of the Government to PT. SAL to develop the *plasma* plot for the transmigrants. It linked the *plasma* farmer (transmigrant) with the company (PT. SAL) and a bank (BNI-Indonesian National Bank). The company was asked to develop *plasma* plots for the transmigrants through funds from the National Bank. The land certificates were collected by the company and handed to the bank as a warranty as it was returned to farmers only after full repayment of the loan through the supply of FFB. The new certificate that was handed to the transmigrant included facts about the oil palm plantation created. Because of a shortage of funds, not all the transmigrants actually joined the PIR Trans scheme and the remaining transmigrant population joined the KKPA scheme in 1996. The contract for the PIR Trans scheme is signed between the company, the bank and the transmigrant, but the contract for the KKPA scheme is signed between the company, the bank and the head of the cooperative. Under the PIR Trans scheme, transmigrants further regrouped themselves into cooperatives, and as such each village unit was made of a cooperative. These cooperatives greatly facilitated the work relationship between the company and the *plasma* farmers, through the supply of FFB to the company's mill, through their bargaining power, especially on pertinent issues like road maintenance or FFB purchasing price.

Under the PIR Trans scheme, the oil palm plot was handed over to the *plasma* farmer by the company after 4 years, i.e. when the palms entered into production. The debt to repay to the bank through the company for the development of a *kapling* (a two hectare plot) was 10,971,000 Rp (796.78€), the interest rate was 12%, a monthly deduction of 30% of the net

income after deduction of the field maintenance (or operational) cost incurred. *Plasma* farmers took 4-7 years on average to complete the repayment of their initial loan.

Under the KKPA scheme between KUD Karya Mukti and PT. SAL, the cost for the development of a *kapling* increased to 38,000,000 Rp (2759.78€) for the first phase of KKPA scheme in 1997, and further increased in the second phase of the KKPA scheme in 2003 to 42,000,000 Rp (3050.28€). These amounts included the cost of *kapling* development and maintenance plus interest rate (14%). A monthly deduction of 30% from the net income for loan repayment after deduction of the monthly field operational cost, 5% payment from total credit to PT. SAL, 2% payment from total credit to KUD Karya Mukti, 5 Rp (3.63×10^{-4} €)/kg for road maintenance, 5 Rp (3.63×10^{-4} €)/kg for the other cooperatives in the villages, 3 Rp (2.18×10^{-4} €)/kg taxes to the local government. The deduction for field operational cost and the re-imbursement of credit by KKPA *plasma* farmers of KUD Karya Mukti is shown on table 22&23 below.

Table 22 : Monthly cost incurred for different farm operations

Type of management operations for the month	**Cost of operation in Rp (Euro)**	**Price=1500Rp (0.11€)/kg**
		Kilogram FFB/kapling/month (2000kg)
Harvesting fee	70 Rp (5.08×10^{-3}€)/kg	140,000 Rp (10.17€)
Loading fee	25 Rp (1.82×10^{-3}€)/kg	50,000Rp (3.63€)
Tax to local government	3 Rp (2.18×10^{-4}€)/kg	6,000 Rp (0.44€)
FFB transportation cost	71.5 Rp (5.19×10^{-3}€/kg	143,000Rp (10.39€)
Farm maintenance cost	52,700 Rp (3.83€)/*kapling*	52,700Rp (3.83€)
Road maintenance	5 Rp (3.6×10^{-4}€)/kg	10,000Rp (0.73€)
Village cooperative fee	5 Rp (3.6×10^{-4}€)/kg	10,000Rp (0.73€)
Fertilizer purchase/application	-	-
Total cost		411,700Rp (29.90€)
Gross income		3,000,000 Rp (217.88€)
Net income		2,588,300Rp (187.98€)
Credit reimbursement	30% of net income	776,490Rp (56.39€)
Balance		1,811,810 Rp (131.58€)

Source: 2012-2013 field survey

Table 23 : Credit repayment by *plasma* farmers (FFB at 1500 Rp (0.11€)/kg)

Total credit + interest	Credit repayment per year (30% net income ×12 months)	Balance credit
Year1 38,000,000 Rp (2759.78€)	9,317,880 Rp (676.72€)	28,682,120 Rp (2083.06€)
Year 2 28,682,120 Rp (2083.06€)	9,317,880 Rp (676.72€)	19,364,240 Rp (1406.34€)
Year 3 19,364,240 Rp (1406.34€)	9,317,880 Rp (676.72€)	10,046,360 Rp (729.63€)
Year 4 10,046,360 Rp (729.63€)	9,317,880 Rp (676.72€)	728,480 Rp (52.91€)
Year 5 728,480 Rp (52.91€)	9,317,880 Rp (676.72€)	-8,589,400 Rp (-623.81€)

Source: 2012-2013 field survey

From table 23 above, it appears that it took 4 years 1 month for *plasma* farmers to complete the repayment of their loan, given that the monthly production stood at 2,000 kg FFB/*kapling* and the price of FFB at 1,500 Rp (0.11€)/kg. Apart from the 38,000,000 Rp (2759.78€), which comprises the credit plus the interest, *plasma* farmers were not subjected to any other payment.

PT. SAL in itself does not run a *nucleus* estate (*inti* plot) and as such, it relies on the supply of FFB by the *plasma* farmers to feed its mill which has a capacity of 60 tons FFB/hr. The contract between PT. SAL and the plasma farmers of PIR trans/the KKPA farmers of Karya Mukti has no fixed duration, probably because PT. SAL has no *nucleus* estate plantation and relies absolutely on FFB supply from *plasma* farmers.

5.4.3 Case 3: PT Megasawindo and KKPA farmers of Muara Kuamang

PT. Megasawindo

PT. Megasawindo (MSP) is a subsidiary of the Incasi Raya Group. The group runs 27 oil palm companies from its head office in Padang, West Sumatra. Megasawindo located in Pelepat was opened in 1997 and is divided into 2 estates. That is Megasawindo I located in Pelepat and Megasawindo II located in Aburan. MSP I has a total area of 4,278.99 ha for the *inti*, while the area for *plasma* is 846 ha, with a milling capacity of 80 tons of FFB/hr. MSP II covers 922 ha of *inti* and 240 ha of *plasma*. MSP I is headed by the plantation controller who is supervised by the senior estate manager. The company employs three categories of

laborers: temporary labor, permanent labor, and contract/hired labor. The pay roll for permanent labour is divided into two groups of workers: the labor force which performs unskilled operations either in office, mill or field are paid by MSP estate office and receive their salary twice a month, while the labor force which performs semi-skilled/skilled operations are paid at monthly intervals and receive their salary directly from the head office in Padang. Apart from their salaries, permanent laborers benefits from housing, electricity, water, and free education for their children at the elementary level, as well as social security. As compared to contract/hired labor, who have established contracts with the company for specified operations with specified deadlines, temporary workers do not have any contract with the company, but after working for some time, they could become permanent workers depending on their output and the strategy of the company. Megasawindo is not a registered member of the RSPO (Roundtable for Sustainable Palm Oil) or ISPO (Indonesian Sustainable Palm Oil).

KKPA farmers of Muara Kuamang

This cooperative was created on paper in 1998, but the management staff was voted into office in 2003, before the handing over of the *plasma* plantation by MSP1 to the hands of the *plasma* cooperative. The cooperative is made of *plasma* farmers originating from 5 villages that were originally involved in the KKPA scheme with MSP1. These villages are namely: Muara Kuamang, Dusun Danau, Sungai Gurun, Rantau Keloyang and Dwi-Karya Bakti. The cooperative is headed by a President, assisted by a Vice-President, a Financial Secretary and a Treasurer. An Audit Team comprises the head and two assistant auditors, which are responsible for auditing the cooperative management. The *plasma* farmers of the cooperative are divided into groups led by a head of group. The cooperative is originally made of locals or natives of the area in four of the five villages mentioned above with the exception of Dwi-Karya Bakti which regroups spontaneous migrants as original members who joined the *plasma* cooperative during its creation. The cooperative gathers 423 KKPA farmers, who own one *kapling* each, making a total area of 846 ha for the *plasma*. Each group owns a block in the *plasma*, and this block is essentially close to the village where group members are resident. The cooperative is made of 17 groups with at least one group in each of the villages involved. The membership of the *plasma* cooperative has greatly evolved today as many newcomers have bought *kaplings* from original *plasma* farmers, even before the "handing over" of the plasma plots by the management of the company to the *plasma* cooperative. According to its President, the cooperative under normal circumstances is supposed to

organize a staff meeting every 3 months, a head of groups meeting with cooperative management is supposed to be held twice a year, as well as an annual meeting that takes place yearly and involves the cooperative management, group heads, and *plasma* farmers with at least a two third majority in attendance. The cost of establishing the *plasma* cooperative was the responsibility of the company and once the members were enrolled, they received capacity building on cooperative management from the Dinas (a government department) in charge of the cooperatives.

The KKPA scheme was established in 1996. It resulted from a policy followed by the Indonesian Government for companies wishing to establish oil palm plantations, in order to involve the local population in partnership agreements as a way to fight poverty and mitigate conflicts. The KKPA scheme was initiated at the dawn of decentralization when the Government of Indonesia was not directly involved in the management of the schemes, but acting as "watchdog" in order to control that oil palm companies properly implemented official regulations. After 1998 - during the decentralization period - power was handed down to the district governments and consequently authorities acting at the district level played an important role as mediators between companies and local populations in the development of plantations.

The mechanism of PIR and KKPA schemes

The PIR–Trans scheme targeted transmigrant, while the PIR-Lokal was designed for native populations. Nevertheless their mechanisms are essentially the same, since it involved the signing of a contract between the farmer, a plantation company and a bank. The company obtained a loan from the Indonesian National Bank (BNI) in order to develop the *plasma* plantation. Once the palms enter into production the *plasma* farmer must supply his fresh fruit bunches to the company in order to pay back the loan plus interest, while the bank keeps the land certificate as a warranty until all credit is paid.

The KKPA scheme involves the signing of a contract between a company, the head of the cooperative and a bank. In the present case the cooperative requests a loan from the bank with the help of the company which is in charge of the development of the *plasma*. When the bank disburses loans, the money does not enter the cooperative coffers but it goes to the company. The company funds the establishment of land certificates for KKPA farmers which are handed over to the bank as a warranty. The company has the obligation to pay back the credit

plus the interest to the bank, through the supply of fresh fruit bunches by the KKPA farmers through their cooperative.

Legal obligations needed for the establishment of MSP1

The company sends forward a formal request to the district government that they wish to develop an oil palm plantation in a given area of the district. The minimum surface area needed for such formalities is 25 ha. The company requests first for the principal permit, the permit to invest in the area. This letter of request goes to the district head (*Bupati*), and if the response at the level of the *Bupati* is positive, the letter is handed over to the department of forestry and plantation (*Disbun / Dinas Kehutanan & Perkebunan*) at the district level. *Disbun* will process this information and provide information about the land suitability of the area in which the company is wishing to invest. All this information is forwarded to the district head, who has the final decision based on *Disbun* recommendation. After the accreditation by *Bupati*, *Disbun* will hand over the principal permit to the company; this permit gives the company the right to formally identify the location for their business.

After receiving the principal permit, the company carries out a field survey of the area in order to determine the potentiality of the area. In this process, the team is usually composed of the company, *Disbun*, and a team of consultants from the Incasi Raya Group (which includes professionals in law, agronomy, geology, environment, surveyors and cartographers, etc.).

The next step taken by the company is socialization or free, prior and informed consent. This is the time when the company briefs the population on its intention to develop an oil palm plantation in the area. During this period the company encourages the local population who own land to join the *plasma* scheme, stating the advantages that accrued from joining the *plasma* scheme, as well as other advantages the community will benefit from due to the presence of the company in the area. The socialization process begins at the district level, continues at the sub-district level and ends in the villages which have customary claims to land in the concession area. The process of socialization takes on average 3-4 months. According to regulations from the department of agriculture (national level), in the procedure to get "IUP"(*Izin Usaha Perkebunan*) or "permit for plantation business", the company has to involve the local population, minimum 20% of their total area, as a prerequisite for the IUP. It is during this socialization process that the company will know the number of persons wishing to join the *plasma* scheme. The socialization process involves the company, the district government, head of the village, the elites, as well as the local population of the area. It is

important to note that though the local population has customary rights to land, all land in Indonesia belongs to the State and as such, the State uses its prerogative to attribute a concession. The company adopts different approaches to source land from the local population. One of the ways is through compensation, and for the case of MSP1 a compensation fee of 200,000 Rp (14.53€)/ha was paid to land owners who had customary rights to unused land and wishing to join the *plasma* scheme. Another approach was to buy land from landowners who were already cultivating this land, but still saw the need to sell the land to the company. Here the price for a piece of land varied from one owner to the other depending on the bargaining power of the landowner. Another way the company used to source land from the local population was for the locals to hand over a 3 ha land as recommended by the company for landowners to enter the *plasma* scheme. In this 3 ha, 2 ha were used to develop the *kapling* in the *plasma* plot, while 1 ha was used for roads, offices, etc. When the company started sourcing land from landowners wishing to join the *plasma* scheme, the company adopted different approaches. The first approach the company used was to request land owners to supply 10 ha, 3 ha were set aside for the *kapling* and offices, roads, etc., and the remaining 7 ha for the *inti*. These 7 ha were paid to the land owner with a compensation price of 200,000 Rp (14.53€)/ha. When the company saw that very few people were able to afford this quantity of land, the company went further to reduce the number of hectares needed to join the *plasma* scheme to 7 ha (3 ha for the *kapling*, offices and roads and 4 ha paid with compensation); this was further reduced to 5 ha (3 ha for the *kapling*, roads, offices and 2 ha paid with compensation). When the company saw that it had already amassed enough land for the establishment of the *inti*, the company finally adopted the 3 ha approach (2 ha for the *kapling*, 1 ha for the roads and offices, with no compensation fee). Some village chiefs played an important role as land brokers during the negotiation process to make sure that their villagers surrendered the minimum surface area possible to the company in order to join the *plasma* scheme. The land that was handed to the company was mostly unproductive land, and there were landowners who handed this unproductive land to the company for the compensation but still were not interested to join the *plasma* scheme. Some of the reasons for this lack of willingness to join the *plasma* scheme were due to the fact that the local population had very little knowledge about the profitability accrued from the cultivation of oil palm as compared to rubber, a commodity in which they had a longer experience.

The following documents are issued by the land owner and the company during the handing over of land to the company in order to join the *plasma* scheme: the “Surat Pernyataan

Penyerahan Lahan Garapan" (this letter testifies that the land owner has handed a given quantity of land to the company, in order to join the *plasma* scheme). In return, the company issues to the land owner the "Surat Tanda Peserta Plasma"(letter of *plasma* membership). During the partitioning of the *plasma* into blocks and later into kaplings, the company issues to the plasma farmer the "Kartu Undian Kapling"(*kapling* toss letter), and after the *plasma* farmer has completed the credit repayment, the company is supposed to hand over the "Surat Hak Milik" or "Sertifikat Lahan" (the land title) to the head of the cooperative.

The next step for the company is to carry out a social and environmental impact assessment (SEIA) of the proposed development in the area. Basically, this process is a prerequisite to get the next permit, which is called the location permit. The SEIA is handled by a consultant, as well as the provincial government, the department in charge of issuing an SEIA certificate. All of these processes have to be reported by the company to *Disbun*. From the report, *Disbun* will recommend the secretary of the district, department of natural resources, to give a location permit to the company. The department of natural resources has the sole responsibility to issue the location permit.

After the company has been issued the location permit, the company can proceed with "land clearing". It is the responsibility of *Disbun* to give a time frame for the company to do the "land clearing" until planting. During this period, the company is supposed to provide a report to *Disbun* on the progress made every 3 months. After planting, the company goes ahead to request for IUP/ *Izin Usaha Perkebunan* (Permit for Plantation Business). This permit is essentially for the plantation and the mill and it is supposed to be provided by the *Dinas Kehutanan and Perkebunan*. The prerequisite to issue the IUP, according to the Ministry of Agriculture in "Permentan No.26/Permentan/OT.140/2/2007", article 17, is shown below;

- The official document authorizing the company to establish.
- Tax registration number (*Nomor Pokok Wajib Pajak* / NPWP).
- Letter of resident/domicile information.
- Recommendation concerning complying with district space planning, for IUP, which is given by the Governor.
- Recommendation concerning compliance with macro plantation development planning by the governor, which is issued by the head of district.
- Location permit from the head of District, also with an area map, with scale 1:100,000 or 1:50,000.

- Technical consideration for land availability from the department of forestry (if the area is in the forest area).
- The guarantee of raw material supply acknowledged by the head of District.
- Plantation development planning and processing unit of production.
- The result of Environmental and social impact assessment according to the rules and regulations of the government.
- The agreement that the land concession handed to the company is not above the maximum size area.
- The agreement that the company is able to have infrastructure and system to control pests and diseases.
- The agreement that the company is able to have infrastructure and systems to open the land without fire and also fire control measures.
- The agreement to develop plantation for the people as in article 11.

  Article 11.

  1. The company with the permit for plantation business has the obligation to develop plantations for the local population, with a minimum of 20% of the total surface area.
  2. The development of the plantations for the local population can take the form of credit mechanism, grant, or share- profit.
  3. The plantation development, both for the population and the company must be developed together at the same period.
  4. The plantation development planning for the local population must be acknowledged by the head of District.
- The agreement of willingness and planning for the partnership.

The company has to also request for the HGU (*Hak Guna Usaha*) or the right to use the land for business (long term lease). With this letter, the company has the right to use the land which belongs to the State. The government department to issue this land is the BPN (*Badan Pertanahan Nasional*) or the Department for National Land Affairs. After the company is issued the HGU, the company has the legal right to do business. Usually the company uses this HGU as a guarantee to borrow money from the bank. After the company must have fully gone operational it is the responsibility of the company to pay the following taxes to the district government. These taxes include: Land and building tax, income tax, and value added tax. In the case of the *plasma* farmers belonging to the cooperative, they also have to pay the

land and building tax at the group level. Take for example, the land and building tax paid by a given group, with total surface area 760,000 square meters, in 2012 amounted to 5,320,000 Rp (386.37€).

The development of the *inti* (nucleus) - *plasma* scheme by MSP1

According to instructions from the *Dinas Kehutanan and Perkebunan* (government department in charge of forestry and plantation), the company is asked to develop the *inti* and *plasma* plantations simultaneously and there is no demarcation of the *inti* from the *plasma* during the immature stage of development. The partitioning between *inti* and *plasma* only comes after 5 years; the *plasma* is then handed by the company to the *plasma* cooperative for management. In the case of MSP1 funds aimed at developing the *inti* plantation was borrowed by the company from Permata Bank, while funds dedicated to the development of *plasma* was borrowed from Mandiri Bank by the cooperative through the help of the company. The minimum ratio proposed by government for the *inti* / *plasma* distribution is 80/20 in terms of plantation area. Figure10 shows the spatial distribution of *inti* and *plasma*.

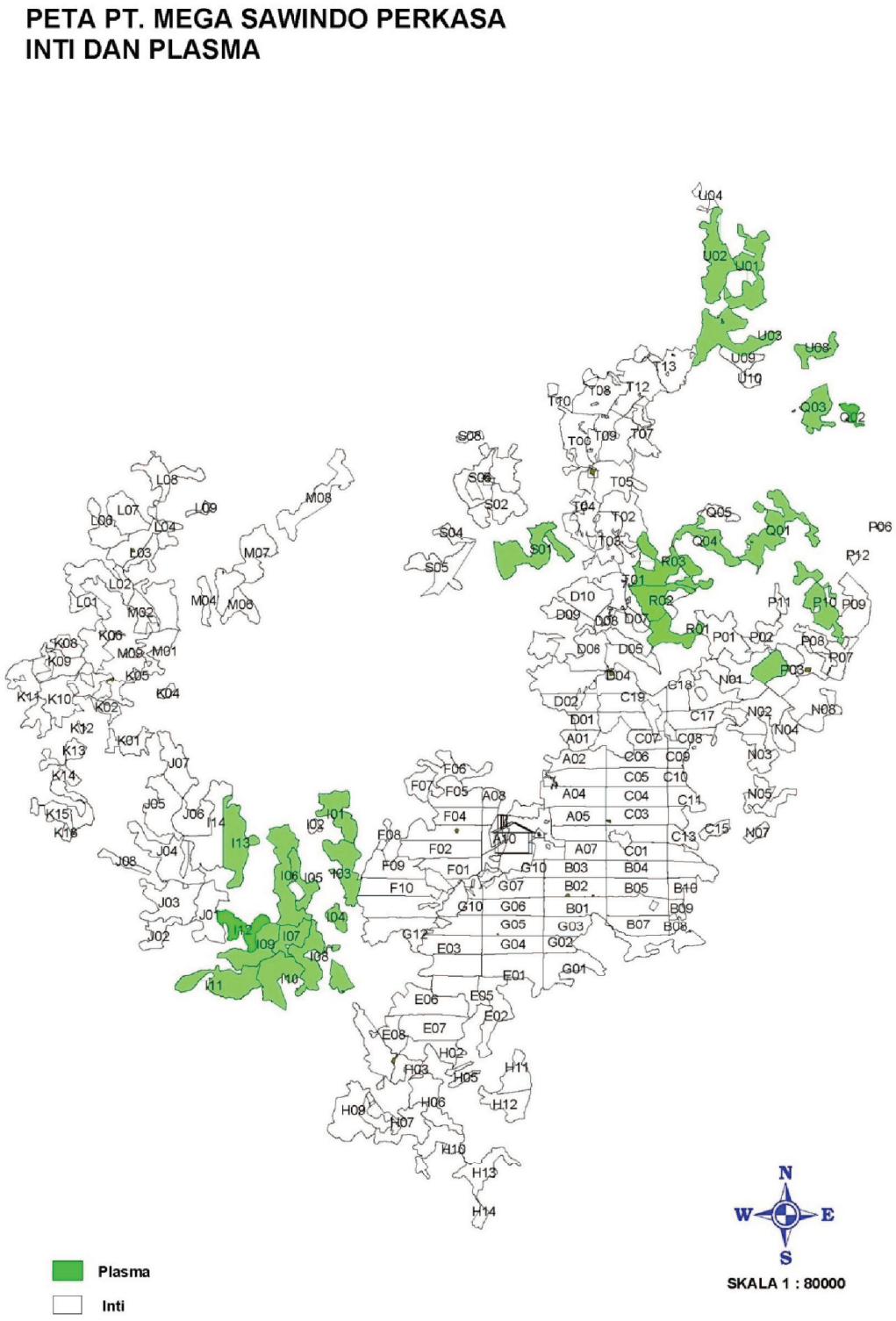

Figure 10 : Spatial distribution of the *inti* and the *plasma* as recorded by a global positioning system (GPS).

A total of 14,113,818,000 Rp (1,025,027.43€) was borrowed for the development of *plasma* plantation which was composed of 423 *kaplings*. Each *kapling* covers 2 ha thus giving a total area of 846 ha for the *plasma* plantation. The development cost of a single *kapling* was estimated at 33,366,000 Rp (2423.23€). The reimbursement of the loan began by the fifth year after planting, when palms have entered into production, with a 16.5% interest rate. The reimbursement was supposed to be paid each month through the supply of FFB to the company by the *plasma* farmers through the cooperative.

Field operations performed by the company during land development includes: forest clearing and felling of trees, windrowing, creation of access roads and bridges, purchase of quality planting materials and installation of a nursery, pre-lining, lining, holing and planting of seedlings, protection by wire mesh, provision of legume cover crop, etc.

Field operations performed at the immature stage of the plantation: the company carries out weeding in areas not fully colonized by the cover crop. Weeding is done either manually or through the use of herbicides using contact herbicides for the weeded circle and systemic herbicide for the inter-row and path. The company also carries out constant eradication of established shrubs in the field. Fertilizer application is done twice a year at recommended doses. Nitrogenous fertilizer is applied to immature palms in order to improve their vegetative vigor then potassium fertilizer is increasingly used when palms enter into production. The company also carries out constant field survey to monitor the incidence of pests and diseases and implement appropriate measures of control.

The company uses different types of labor: temporary, permanent, contractors, consultants, workers from *plasma* cooperative, etc. The *plasma* cooperative also forms an integral part of the labor force during the development of the plantation by the company. This implies that some operations can be undertaken by the *plasma* cooperative and payment is provided by the company upon completion of the operation. The cooperative also helps in the mediation of land conflicts that may arise in the course of plantation development.

After 5 years, it is expected that the plantation is in production. The *plasma* plantation is then handed over to the cooperative for management. But before this is done, the *plasma* must be partitioned into blocks, each block being further partitioned into 2 ha *kaplings*. Once this operation is completed, *kaplings* are distributed to the *plasma* farmers through a toss draw. The attribution of blocks to *plasma* farmers must be as close as possible to their village of residence. The *plasma* farmers of a block/group will elect their group head. The group head is

the representative of the management of the *plasma* cooperative. He/she acts as a middleman between the *plasma* cooperative and his group. During the day of the toss for *kapling* attribution to *plasma* farmers, the following stakeholders must be present: the head of the village, the representative of the company, the *plasma* farmers and the *Dinas Perkebunan*. Before the "hand over" or "land conversion" to the *plasma* cooperative for management, the following conditions must have been met by the company:

- The planting density must be at minimum of 256 palms/ *kapling*.
- A minimum of 179 palms should bear bunches.
- A minimum of 217 palms should bear female inflorescence.
- The area of the *kapling* must cover a minimum 1.9 ha and a maximum 2.1 ha.
- The average weight per bunch should be 3.5 kg minimum.
- The farm should be free from weeds.
- The plantation road must be usable during the rainy and dry season.
- There should be also access roads entering the blocks of the plasma plot, equipped with adequate drainage in order to avoid water logging and floods.

Transfer of *plasma* management by the company to the cooperative

After 5 years, the management of the plasma is handed over to the cooperative. At this stage, the *plasma* farmers are supposed to begin to reimburse their loan under the form of FFB supplied through the *plasma* cooperative to the company. It is the responsibility of each farmer to pay back the 33,366,000 Rp (2423.23€) used for the development of his *kapling* with an interest rate of 16.5%. The supply of FFB to the company's mill is carried out twice a month by the *plasma* farmer and the repayment of debt is done once a month. Every month, 60% from the net income obtained after deduction of all field operational cost is set aside by the company for the payment of the loan plus the interest and the remaining amount is handed to the *plasma* farmer (Feintrenie et al., 2010). Group heads play a pivotal role in the management of the blocks. Operations like weeding/herbicide application and manuring, pruning, harvesting, weighing, transportation of the FFB to the mill are all under the supervision of the group heads. Though the *plasma* plantation has been handed over to the cooperative for management, the company does not completely leave the management of the *plasma* to the cooperative. The company comes from time to time to ensure that the various operations are carried out following its standards. This is usually done through the manager in charge of the *plasma* plantation. There is a continuous transfer of information and managerial

and technical knowledge needed for the smooth functioning of the *plasma* cooperative. During the harvesting of a given block/group, the supervision is usually performed by the head of group. The harvesting is performed simultaneously for all the *kaplings* belonging to the same block. FFB from a given *kapling* are weighed and registered on the "DO" or "pass" (delivery order) bearing the name of the *kapling* owner. This is done for all the *kaplings* belonging to the same block. After harvesting, FFB are loaded on a hired truck, since the *plasma* cooperative does not own trucks. After the loading, the next step is the evacuation of FFB to the company's mill. When FFB arrive in the mill, they are taken to the weighbridge, then transported to the quality control unit of the mill. Quality standards for *plasma* FFB are as follows: 100% mature fruits, fresh fruit/not overnight, the stalk must be short (max. 2 cm), bunch weight (min. 4 kg). The grading/mill sorting is undertaken for: immature fruits, rotten fruits, rotten fruit bunches, empty bunches, long stalked bunches, rotten loose fruit, abnormal fruits. After quality control, the rejected bunches are put in the truck, the truck has to pass through the weighbridge in order to get the net weight of usable FFB. The weight of bunches discarded after quality control is shared by all the members in the group/block. The final receipt bearing the name of each *kapling* holder shows this reduction in weight of accepted bunches. The receipts of the various group members are handed over to the group head. Two copies of this receipt are printed in the mills weighbridge, one copy is handed to the group head and the remainder is handed to the finance controller of the company. The group head in turn makes a photocopy of these receipts, hands the photocopy to the treasurer of the cooperative, and the original to the *plasma* farmers belonging to the group. The recapitulation of the various costs per operation incurred for that month is done at the level of MSP1 and forwarded to the head office in Padang for confirmation. Once the recapitulation is confirmed in Padang, 60% of the net income is deducted for the payment of the loan due the company, the remainder being sent to the company's account in Mandiri bank. This implies that the money due for the *plasma* farmers is kept in a special account in Mandiri Bank. This account is called *TBS luar* (money from the sale of FFB from outside). All these transactions take a maximum period of one month. When it is time for payment of the *plasma* farmers, the treasurer of the cooperative collects the various receipts bearing the names of the *plasma* farmers and the quantity of FFB supplied to the mill for that month to the finance controller of the company. The finance controller issues a check for the payment of the *plasma* farmers and the different operations performed in the *plasma* plot for that month. The treasurer of the cooperative goes to Mandiri Bank to cash in this money. Each *plasma* farmer comes to the cooperative to collect the monthly income for his *kapling*. The rest of the money is used to

pay labor that was hired to perform specific operations in the *plasma* plot. Table 24 shows the cost per operation performed in the *plasma* plot. When the *plasma* farmer performed some or all of the operations in his *kapling*, he is paid back for his work. The *plasma* farmer whose *kapling* has not yet entered into production after 5 years is given a monthly subsidy by the company.

Table 24: Monthly cost incurred for different farm operations

Type of management operations for that month	**Cost of operation in Rp (Euro)**	**Price=1000Rp (7.26×10^{-2}€)/kg**	**Price=1500Rp (1.09×10^{-1}€)/kg**
		Kilogram FFB/ kapling/month (2000kg)	
Management fee to company	10% of total harvest	200,000 Rp (14.53€)	300,000 Rp (21.79€)
Fee *kooperasi*	10 Rp (7.26×10^{-4} €)/kg FFB	20,000 Rp (1.45€)	20,000 Rp (1.45€)
Harvesting fee	70 Rp (5.08×10^{-3}€)/kg	140,000 Rp (10.17€)	140,000 Rp (10.17€)
Loading fee	25 Rp (1.82×10^{-3}€)/kg	50,000 Rp (3.63€)	50,000 Rp (3.63€)
Tax to local government	3 Rp (2.18×10^{-4}€)/kg	6,000 Rp (0.44€)	6,000 Rp (0.44€)
FFB transportation cost	71.5 Rp (5.19×10^{-3}€)/kg	143,000 Rp (10.39€)	143,000 Rp (10.39€)
Farm maintenance cost	52,700 Rp (3.83€)/*kapling*	52,700 Rp (3.83€)	52,700 Rp (3.83€)
Fertilizer purchase/application	-	-	-
Total cost		611,700 Rp (44.43€)	711,700 Rp (51.69€)
Gross income		2,000,000 Rp (145.25€)	3,000,000 Rp (217.88€)
Net income		1,388,300 Rp (100.83€)	2,288,300 Rp (166.19€)
Credit reimbursement (main debt + interest)	60% of net income	832,980 Rp (60.5€)	1,372,980 Rp (99.71€)
Balance		555,320 Rp (40.33€)	915,320 Rp (66.48€)

Source: 2012-2013 field work

The calculation for the payment of this subsidy is as follows: max. net income per group for that month + min. net income per group for that month/2.

Given that the production of FFB per kapling was stable as above (2000 kg/month), the supply of FFB to the company's mill consistent, the prices of a kilogram of FFB stood at 1000 Rp (7.26×10^{-2} €)/kg and 1500 Rp (1.09×10^{-1}€)/kg. It is possible for *plasma* farmers to use 5 years 2.6 months and 2 years 7 months respectively to complete the repayment of their credit to the bank. In the event where the *plasma* farmer is not consistent with the repayment of his credit, he also records an accumulation of the interest to the main credit as shown in bold on table 25 and 26.

Table 25: Credit repayment by *plasma* farmers when the price of a kilogram of FFB is 1000Rp

Credit (in Rp)	**Interest to pay for the year (16.5%)**	**Interest actually paid**	**Credit actually paid**	**Interest not paid for that year**	**Carried over credit for the next year**
(Year 1) 33,366,000Rp (2423.23€)	5,505,390Rp (399.83€)	5,505,390Rp (399.83€) -	4,490,370Rp (326.12€) -	- **5,505,390Rp (399.83€)**	28,875,630Rp (2097.12€) **38,871,390Rp (2823.07€)**
(Year 2) 28,875,630Rp (2097.12€) **38,871,390Rp (2823.07€)**	4,764,479Rp (346.02€) **6,413,779.4Rp (465.81€)**	4,764,479Rp (346.02€) -	5,231,281Rp (379.93€) -	- **6,413,779.4Rp (465.81€)**	23,644,349Rp (1717.19€) **45,285,169.4Rp (3288.87€)**
(Year 3) 23,644,349Rp (1717.19€) **45,285,169.4Rp (3288.87€)**	3,901,318Rp (283.34€) **7,472,053Rp (542.67€)**	3,901,318Rp (283.34€) -	6,094,442Rp (442.61€) -	- **7,472,053Rp (542.66€)**	17,549,907Rp (1274.58€) **52,757,222.4Rp (3831.54€)**
(Year 4) 17,549,907Rp (1274.58€) **52,757,222.4Rp (3831.54€)**	2,895,735Rp (210.31€) **8,704,941.7Rp (632.2€)**	2,895,735Rp (210.31€) -	7,100,025Rp (515.64€) -	- **8,704,941.7Rp (632.2€)**	10,449,882Rp (758.93€) **61,462,164.1Rp (4463.74€)**
(Year 5) 10,449,882Rp (758.93€) **61,462,164.1Rp (4463.74€)**	1,724,231Rp (125.22€) **10,141,257.1Rp (736.52€)**	1,724,231Rp (125.22€) -	8,271,529Rp (600.73€) -	- **10,141,257.1Rp (736.52€)**	2,178,353Rp (158.2€) **71,603,421.2Rp (5200.26€)**

(Year 6) 2,178,353Rp (158.2€) **71,603,421.2Rp** **(5200.26€)**	359,428Rp (26.1€) **11,814,564.5Rp** **(858.04€)**	359,428Rp (26.1€) -	9,636,332Rp (699.85€) -	- **11,814,564.5Rp** **(858.04€)**	-7,457,979Rp (541.64€) **83,417,985.7Rp** **(6058.3€)**

Source: 2012-2013 field work

From table 25 above, apart from the reimbursement of the 33,366,000 Rp (2423.23€) as the main credit, the *plasma* farmer also has to pay an additional 18,869,029.07Rp (1370.38€) as interest, provided the production and the price of FFB does not change. In the event where the farmer is not consistent in the payment of his credit, he witnesses an accumulation of the interest to the main credit as shown in bold.

Table 26 : Credit repayment by *plasma* farmers when the price of a kilogram of FFB is 1500 Rp.

Credit (in Rp)	**Interest to pay for the year (16.5%)**	**Interest actually paid**	**Credit actually paid**	**Interest not paid for that year**	**Carried over credit for the next year**
(Year 1) 33,366,000Rp (2423.23€)	5,505,390Rp (399.83€)	5,505,390Rp (399.83€) -	10,970,370Rp (796.73€) -	- **5,505,390Rp** **(399.83€)**	22,395,630Rp (1626.5€) **38,871,390Rp** **(2823.07€)**
(Year 2) 22,395,630Rp (1626.5€) **38,871,390** **(2823.07€)**	3,695,278.95Rp (268.37€) **6,413,779.4** **(465.81€)**	3,695,278.95Rp (268.37€) -	12,780,481.05Rp (928.19€) -	- **6,413,779.4Rp** **(456.81€)**	9,615,148.95R (698.31€) **45,285,169.4Rp** **(3288.87€)**
(Year 3) 9,615,148.95Rp (698.31€) **45,285,169.4 Rp** **(3288.87€)**	1,586,499.58Rp (115.22€) **7,472,053Rp** **(542.66€)**	1,586,499.58Rp (155.22€) -	14,889,260.47Rp (1081.34€) -	- **7,472,053Rp** **(542.66€)**	-5,274,111.47Rp (-383.04€) **52,757,222.4Rp** **(3831.54€)**

Source: 2012-2013 field work

From table 26 above, apart from the reimbursement of 33,366,000 Rp (2423.23€), the *plasma* farmer is also supposed to pay an additional 10,126,127.04 Rp (735.42€) as interest, provided the production and price of FFB remain constant. In the event where the farmer is not consistent in the payment of his credit, he witnesses an accumulation of the interest to the main credit as shown in bold.

According to secondary data collected at the level of MSP1, by November 2012, 86.7% of the credit for the development and field maintenance cost during the immature phase of the *plasma* plot had been paid as shown on table 27.

Table 27 : The repayment of credit with respect to different groups by November 2012

Name of village	Names of groups	No. Kapling/ group	Surface area/ group (in Ha)	Total credit owed/group (in Rp)	Credit left as at Nov 2012 (in Rp)	% repayment of credit as at Nov 2012
Dwi-Karya Bakti	Sumber Harapan	31	62	1,034,346,000Rp (75,120.21€)	-	100
	GI Bahman	48	96	1,601,568,000Rp (116,315.17€)	946,133,022Rp (68713.68€)	40.9
	Sumber Rezeki	27	54	900,882,000Rp (65,427.28€)	-	100
Muara Kuamang	Pinang Sebatang	17	34	567,222,000Rp (41,194.96€)	-	100
	Payo Ujo	21	42	700,686,000Rp (50887.89€)	-	100
	Danau Puleh	16	32	533,856,000Rp (38771.72€)	-	100
	Teluk Beringin	17	34	567,222,000Rp (41194.96€)	-	100
Sungai Gurun	Sungai Gurun 1	21	42	700,686,000Rp (50887.89€)	1,718,620Rp (124.82€)	99.8
	Sungai Gurun 2	19	38	633,954,000Rp 46041.42€)	62,284Rp (4.52€)	99.9
RantauKeloyang	Rantau Keloyang	17	34	567,222,000 (41194.96€)	247,193,061Rp (17952.6€)	56.4
Dusun Danau	Maju Jaya	26	52	867,516,000Rp (63004.05€)	327,455,446Rp (23781.72€)	62.3
	Anasrullah	12	24	400,392,000Rp (29078.79€)	40,491,000Rp (2940.69€)	89.9
	Abd. Aziz	22	44	734,052,000Rp (53311.12€)	15,000,315Rp (1089.41€)	97.9
	Harapan Jaya	41	82	1,368,006,000Rp (99352.54€)	92,562,287Rp (6722.41€)	93.2
	H8 Desa Danau	16	32	533,856,000Rp (38771.72€)	3,006,800Rp (218.37€)	99.4
	Suherman	34	68	1,134,444,000Rp (82389.91€)	207,084,917Rp (15039.71€)	81.7

	Sungai Mas MK1	38	76	1,267,908,000Rp (92082.84€)	-	100
Total	**17**	**423**	**846**	**14,113,818,000Rp (1025027.43€)**	**1,880,707,753Rp (136587.92€)**	**86.7**

Source: 2012-2013 field work

Management of the kapling by the plasma farmer

Once the *plasma* farmer has completed the reimbursement of his loan, the management of his *kapling* is handed over to him by the cooperative. Thus, he takes full control of the various agricultural operations. A *plasma* farmer is entitled to one *kapling* only. This implies that even though he can be eligible for 2 *kaplings* depending on the surface area of land handed to the company, one *kapling* bears his name and the other *kapling* bears either the name of his wife or of one of his children. The *plasma* farmer could undertake the day to day management of his *kapling* if he is willing, physically fit and has the necessary expertise to perform some technical operations like pruning and harvesting. In a situation where the *plasma* farmer is already busy with other economic activities (i.e. employee from the government or private sector, businessman, etc.) and not able to work in his *kapling*, he hires labor. In the case of Muara Kuamang *plasma* farmers, most of the labor comes from the transmigrant area in Kuamang Kuning. The *plasma* farmer can harvest and sell his FFB to the *plasma* cooperative, or else he can harvest and sell the FFB from his *kapling* directly to the mill. The minimum quantity of FFB needed to supply the mill is 2.5 tons per *kapling*. When the *plasma* farmer intends to supply his FFB to the company's mill, he needs a "DO" or "pass" from the cooperative which he can collect from his group head. The "DO" or "pass" for *plasma* farmers who have completed the payment of their loan to the company is different from the "DO" or "pass" for farmers who are still in debt. The *plasma* farmer who supplies his FFB to the company's mill is paid per the price for a kilogram of FFB as given by the company for that period. The farmer may decide to harvest FFB and sell them to the cooperative or to a middleman. In such a case, the *plasma* farmer is paid in accordance to the price proposed by the *plasma* cooperative and the middleman respectively. This price is often lower than the company's price, since the cooperative or middleman needs to pay for the cost of weighing, loading and transportation of the FFB to the mill. The main advantage here is that the farmer gets instant cash from either party, and does not bear the losses from quality control at the mill's gate. For example, a ton of FFB purchased at 1,100 Rp (7.99×10^{-2}€) by MSP1 in December 2012 could be purchased at 900 Rp (6.54×10^{-2}€) by the cooperative and 850 Rp (6.17×10^{-2}€) by a middleman. When the *plasma* farmer has completed the repayment of his

loan, he does not face any deduction from his income any longer. The only deduction at the level of the cooperative is 50 Rp (3.63×10^{-3}€)/ kg of FFB supplied to the mill. The transactions for selling FFB to the company's mill are the same, but the payment is done over a maximum period of 1 week. The *plasma* farmer eventually collects his money from the treasurer of the cooperative. *Plasma* farmers who have completed the repayment of their loan can then make a lot of profit, given that the production of their *kapling* and the price paid for FFB are high.

Field implementation lapses of the contract between MSP1 and KUD Muara Kuamang.

- With reference to article 1, number 8 of the contract, as long as the loan repayment by plasma farmers is not completed, the management of the *plasma* is in the hands of the company. But in practice, this is not what happens, because the management of the *plasma* is handed by the company to the cooperative after 5 years of company's control. Notwithstanding, the company still provides managerial and technical support to the cooperative through their management staff.
- The contract specifies that if the *kapling* is sold to a third party, the amount due must be reimbursed instantly. Even after the loan is completely repaid and the *plasma* farmer receives the land certificate from the company, he is not supposed to sell his *kapling*. In practice some farmers sold their *kapling* even before the handing over by the company. The sale of *kaplings* also weakens the management put in place by the cooperative especially for group heads. This usually occurs when the new buyers are not residing in the village. Gillespie (2010) also recorded plot sales on a scheme located in the Sanggau district of West Kalimantan.
- The contract stipulates that the land certificates will be handed to the head of the cooperative, upon completion of loan repayment. But some *plasma* farmers because of their poor understanding of the contract believe that the land certificate will be handed to them after completion of loan reimbursement.
- The contract stipulates that the company is in charge of the management of the *plasma* until the farmers completed the repayment of their loan. But for the past two years, most *plasma* farmers have been complaining about the poor state of the roads leading to their block. Some *plasma* farmers who are still to complete the repayment of their loan also complain that for some time now, the cost of management of the *plasma* plot is in their hands but the company still deducts the cost of field operations without handing this money to the *plasma* farmer. Farmers will have to wait for one month in

order to collect their money from the sale of FFB, since the recapitulation that is done at the level of MSP1 must be confirmed at the level of the head office in Padang. These 3 reasons force some of the *plasma* farmers who are still to complete the repayment of their loan to sell their FFB to middlemen for instant cash.

- The contract stipulates that all FFB harvested from the *plasma* plot must be sold to the company for one full production cycle (27 years), but some *plasma* farmers who are still to complete the repayment of their credit, do not only sell their FFB to middlemen in recent times, but also go ahead to use the "DO" or "pass" for *plasma* farmers who have completed the repayment of their credit in order to evade or escape from the deduction due for the company.
- When the *plasma* plantation was still managed by the company, it was managed in the same manner as the *inti*, but as soon as the *plasma* plot was no longer in full control of the company, the management level dropped, including the level of fertilization. When palms were ready for leaf sampling in order to better adapt fertilization to the palms' requirements, the company did that for the *inti*, but the cooperative did not do the same for the *plasma*. As such, the fertilization of the *plasma* currently follows recommendations from leaf analysis performed on the company's *inti*. Despite this, plasma farmers are still reluctant to carry out accurate fertilization, because of the enormous cost incurred. The cost of accurate fertilization for 1 ha of mature palms is estimated at 6,683,000 Rp (485.36€).
- By contract, the repayment of the loan is supposed to begin after 5 years but in reality by the 4th year the palms have already started producing. This implies that with just a minimum production of 3 tons FFB/ha/year during the 4th year, 423 *kaplings* will be able to generate 423 × 2 × 3 tons = 2,538 tons FFB/ 846 ha /year. From the oil extraction rate given by the company, it shows that one ton of FFB is able to yield 0.24 × 2,538 ton= 609,120 kg of CPO. Given that the government price for the sale of CPO at the period is 7,000 Rp (0.51€)/kg. This implies the company can make a gross profit of 609,120 kg × 7,000 Rp (0.51€)/kg= 4,263,840,000 Rp (309,664.82€).

Indicators for loan reimbursement

The FFB yield in *plasma* plots were quite encouraging, though it was not comparable with that of the *inti*, but with such yields it is possible for *plasma* farmers to make profit, especially after completing the repayment of their loan. Several factors are known to contribute to the yield. They include, the utilization of selected and certified planting material by the company,

efficient fertilization especially during the first five years before palms were finally handed to the *plasma* cooperative, controlled attacks from pests and diseases, adequate rainfall in the area (3,000-4,000 mm/year), adequate sunshine, together with warm temperatures (> 28°C) especially during the day. The respective yields for *plasma* and *inti* are shown in Figure 11.

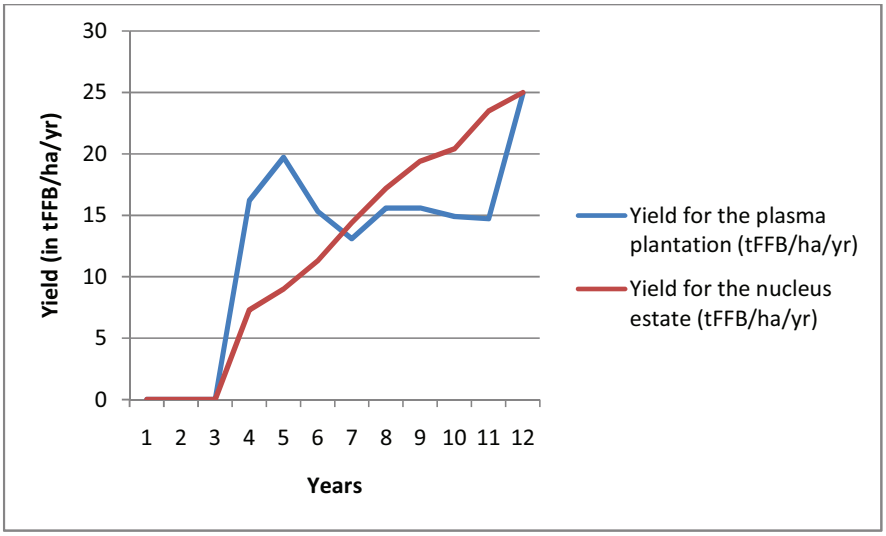

Figure 11: Annual yield for *nucleus* estate and *plasma* plantations (in t FFB/ha/yr).

Figure 11 shows that yields in the *plasma* plots are not consistent when compared to the one from *inti* plantations. The reasons behind this inconsistency could be the fact that *plasma* farmers not only supply FFB from the *plasma* but also from semi-independent plots, without any recording of the surface area of these semi-independent plots. Independent oil palm smallholders also buy "DO" or "pass" from the *plasma* cooperative, or sell their bunches to the *plasma* cooperative, if they don't want to sell their bunches to the middlemen, since they do not have direct access to the mill of MSP1. The resulting FFB, when supplied to the company, is registered under the name of the *plasma* cooperative, from which it did not originate.

Another positive indicator was the price of a kilogram of FFB purchased by the MSP1 mill. *Plasma* farmers testified that the price of FFB from the company has always been moderate, except during the financial crisis in early 2008. They claimed that the price has always been on average 1,500 Rp (0.11€)/kg of FFB. There was also not much difference observed for the company's price and the price documented by the provincial government for the purchase of FFB from KKPA farmers by oil palm companies for the last 3 years as showed on Figure 12.

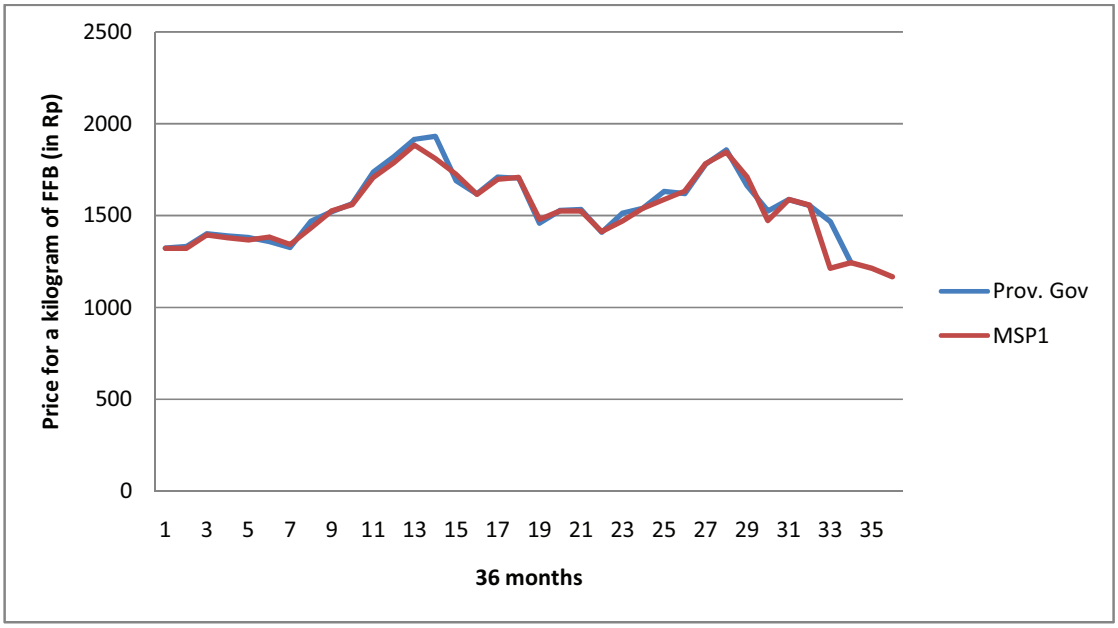

Figure 12: Monthly FFB price for MSP1 and Provincial government from January 2010 to December 2012.

There is little difference between the price proposed by MSP1 and that proposed by the provincial government in order to protect KKPA farmers from price fluctuation and the low purchasing prices from some oil palm companies.

Middlemen: Another type of lucrative business in the oil palm sector is the purchase of FFB from independent smallholders, semi-independent farmers and even *plasma* farmers and the eventual sale of these FFB to the company's mill of their choice depending on the purchasing price. In the Pelepat sub-district, two companies own mills, (MSP1 and PT SAL) with a capacity of 80 tons/hr and 60 tons/hr respectively. As opposed to MSP1 where the middleman must have a contract with the company in order to supply FFB, PT SAL has a different policy, as middlemen barely need a "DO" or "pass" from any of the village cooperatives in order to supply the purchased FFB to the mill. These middlemen often buy FFB at a lower price than the company. For example, if the company pays 1,100Rp (7.99×10^{-2} €) for a kilogram of FFB, (December 2012) the middleman may decide to buy the FFB at 850Rp (6.17×10^{-2}€), and sell to the company at the company's price mentioned above. Middlemen also have agents who buy directly from the smallholders either in their farms or the residence of the smallholders and in turn sell FFB to the middleman. If middlemen pay 850Rp (6.17×10^{-2}€)/kg, agents may decide to pay 800Rp (5.81×10^{-2}€)/kg and sell to the middleman at 850Rp (6.17×10^{-2}€)/kg. In

order to facilitate their work, most middlemen in the area own trucks, which greatly helps in the evacuation of the FFB bought from smallholders to the company's mill. Most of these trucks can carry 7-10 tons of FFB at each round.

Different palm oil production systems were identified in the area. These include: the agro-industry, the *plasma* smallholders, the semi-independent smallholders, and independent smallholders. The production systems put in place ranged from access to capital, land acquisition/ access to land certificate, access to planting material, type/cost/rates of inputs used, cropping system adopted, farm management cost, type of labour used, the range of farm size, yield per hectare, the harvesting and sale of FFB, the price per a kilogram of FFB.

Agro-industries are established after fulfilling the required legal procedures needed for their establishment. They have enormous income in their reserve and also have direct access to banks, seed research institutes, and wholesalers responsible for the sale of inputs like fertilizers, pesticides, fungicides, etc. and other equipment needed for their plantation. Their access to land comes directly from an order by the district government. They pay different types of taxes to the government, due to the presence of their business on the site. These taxes include: land and building tax, income tax, value added tax, etc. They often use temporary, contract and permanent labour in order to execute the different operations in the plantation, and the cropping system adopted is usually monocropping both during the pre and production stages of the plantation, with an efficient fertilization program and rates, based on recommended doses. They usually have very good yields with up to 30 tons/ ha like the case of MSP1, with an oil extraction rate of 24% for the mill. The FFB generated from the *inti*, *plasma* and independent smallholders are used to feed the company's mill.

Plasma smallholders enter into contract with the company for the development of their *plasma* plot and in turn pay back this credit through the supply of FFB to the company's mill. They can sign the contract directly with the company like in the case of the PIR trans/local scheme, or they can sign the contract with the bank through the help of the company by their cooperative president like in the case of the KKPA scheme. This partnership with the company gives them the opportunity to have quality planting material, accurate fertilization of their plot especially when the palms are still to be handed over to the cooperative. This advantage in quality planting material and accurate fertilization, especially when the palms are still at their immature stage, is inextricably linked to high yields. Mature palms were able to yield an average of 22 tons/ha/year for the *plasma* farmers of KKPA Muara Kuamang.

Semi-independent smallholder's are *plasma* farmers who have decided to buy another piece of land, say 1 or 2 ha still for the cultivation of oil palm. What has pushed them to increase their acreage of oil palm plantation is their awareness about the profitability of the crop. But at this level, the advantages they used to enjoy for their *plasma* plot through the supply of quality planting materials, technical services and inputs from the company is no longer the case, as they have to access their planting material either through the purchase of seeds/seedlings from suppliers who claim to buy the seeds in Medan (North Sumatra), where the Indonesian oil palm research institute is located. They use the expertise gathered in their *plasma* plot in the management of the different operations in their semi-independent plot. The type and quantity of fertilizer to apply in their semi-independent plot is their prerogative. They also decide to which mill to supply their FFB, depending on the price offered for a kilogram of FFB. Most often the yield from these semi-independent plots is lower than the yield from the *plasma* plots.

With independent smallholders, the development of their independent plot is done with very little or no assistance from outside. The type of seedlings used is often of doubtful quality as they rely on private seed suppliers and people who have erected their own nursery for the sale of planting materials. This is clearly seen in the yield difference between independent oil palm plots and *plasma* plots. While *plasma* farmers registered an average yield of 4 tons FFB/kapling/month, independent smallholders registered an average 2.5 tons FFB/kapling/month. They also choose the mill with the highest price to sell their FFB.

5.4.4 Case4: PT Musim Mas and KKPA farmers of Sorek

The Musim Mas Group has its business origin in Nam Cheong Soap Factory, established in 1972 by its late founder Anwar Karim. Today, the company is currently managed by Bachtiar Karim, Burhan Karim and Bahari Karim, sons of the late founder.

The group is made of subsidiary upstream oil palm companies, mid and downstream industries that refine palm oil and the manufacturing of consumer and cosmetic products from palm oil. (The company's logo carries the slogan "Peoples, Planet, and Prosperity".) The businesses of the Musim Mas group are located in 12 countries worldwide:

PT Musim Mas is the first in Indonesia to be certified with RSPO (Roundtable of Sustainable Palm Oil) and other certifications like ISCC (International Sustainable Carbon Certification), ISPO (Indonesian Sustainable Palm Oil), RFS (Renewable Fuel Standard); though for the last three cases not all the estates have been certified. The company has not only limited its certification agenda to the agro-industries, but has also extended this move to its smallholders' schemes. In fact, the scheme smallholder covering 1.524 ha in PT Agrowiratama (which is one of Musim Mas group estates) was the first smallholder scheme to be RSPO certified in Indonesia. The scheme smallholders in Sorek North and South follows and was RSPO accredited on 2nd March 2011. As a result of these achievements with its smallholders, a study of the company's KKPA scheme with oil palm smallholders could serve as an example for implementation by other company-smallholders partnerships.

PT Musim Mas Sorek is composed of 6 estates which was then grouped as Sorek North and Sorek South, with a total land leased *Hak Guna Usaha* (HGU), or Long term lease area of 28,333.1 ha. Two separate general managers head the six estates, while a dedicated scheme smallholder manager and his team located in Estate II (Sorek North) head the whole company KKPA Smallholder Scheme. Sorek North is composed of 3 plantation estates and 1 mill, 1 primary school and 1 kindergarden located at Estate II, all estate have their own clinic and housing for the staff and workers, the company also provide water, electricity, etc. The company uses 3 categories of workers: permanent workers, temporary workers and contractors. The minimum salary of the permanent workers is determined by the Provincial Authorities with the minimum wage of 1,509,000 Rp (109.59€) + 117,000 Rp (8.5€) (Natura/ in-kind) = 1,626,000 Rp (118.09€) for the year 2013. Despite this minimum wage per month, the worker also benefits from overtime bonus, which is added to his wage.

Permanent workers benefit from salary, bonus, pension at retirement, insurance in case of accident, free medical service, free housing, water, electricity, free education for nursery and primary school level, paid leave and paid maternity leave for 3 months.

The legal and institutional procedures for the development of an oil palm company

Musim Mas like any other company will definitely need the following permits in order to fully go operational. Most of these documents are issued by the district authorities, especially after decentralization policies that were introduce in 1999.

Izin prinsip (Principal permit): This is issued by the Bupati to indicate that the company has been allowed to invest. *Izin lokasi* (Location permit): This document shows where the company is supposed to invest and is issued by the National land authority and endorsed by the Bupati. Next, a team is created and sent to the location to determine that:

- The area is not encroaching a forest reserve;
- The area has not been given to another company/or party;
- The said area is eligible for non-forest usage.

From the *izin lokasi*, the final area can be bigger or smaller than that of the *izin lokasi*. Once the area has been determined, then the next step will be to socialize with the people who have customary rights to the said land (principle 2 in RSPO). Once the compensation part of the local population has been done, the company proceeds to get the *Hak Guna Usaha* (HGU or long term lease). First land lease duration is 35 years, after which the company needs to apply for an extension of 25 years, and eventually another extension for 25 years, as such the company will need to renew the *Hak Guna Usaha*. A Social Environmental Impact Assessment (SEIA) or AMDAL study must be done before proceeding with land clearing. This job is done by an independent consultant and the report is presented to the government. The company will definitely need other permits in order to operate; *Izin Usaha Perkebunan* (IUP or plantation enterprise permit). This document will carry information about the number of hectares allowed for land development, the type of crop to be planted (i.e. oil palm, rubber), the processing capacity of the mill. The company will also need an operational permit, a building permit, and a permit for using water, etc. As already mentioned above, these permits are presently issued at the District level after the decentralization policies that were put in place by the Indonesian government in 1999, except in a situation where the Land concession given to the company falls within two or more districts, then these permits will be

issued at the Provincial level. It is important to note that during the socialization process between the company and the local population, the basis of the negotiation should be win-win. The government decree No. 26/Permentan/OT.140/2/2007, article 11 of 2007 stipulates that all oil palm companies should set aside atleast 20% of their land for the development of oil palm plantations for the local population and this is applicable for projects develop after the announcement of the decree. That notwithstanding, the local government can insist that the company increases this proportion to 30%, especially when the population density is high in the area.

The Plantation and Research Departments

The General manager (GM) manages 12,000 ha of oil palm plantation, under him is the Senior estate manager (SEM) who also manages 12,000 ha. Then follows the Estate manager (EM) who manages 4,000 ha. Next is the Senior assistant (SA) who manages 2,000ha, next is the Assistant (A) who manages 500 ha, under him we have one field supervisor, and one junior supervisor. In terms of labour, 1 harvester/pruner is supposed to take care of 18 ha of palms, while 1 weeder/manurer is supposed to take care of 20 ha. Fig 13 below shows the sizes of the different plots managed by the different company heads.

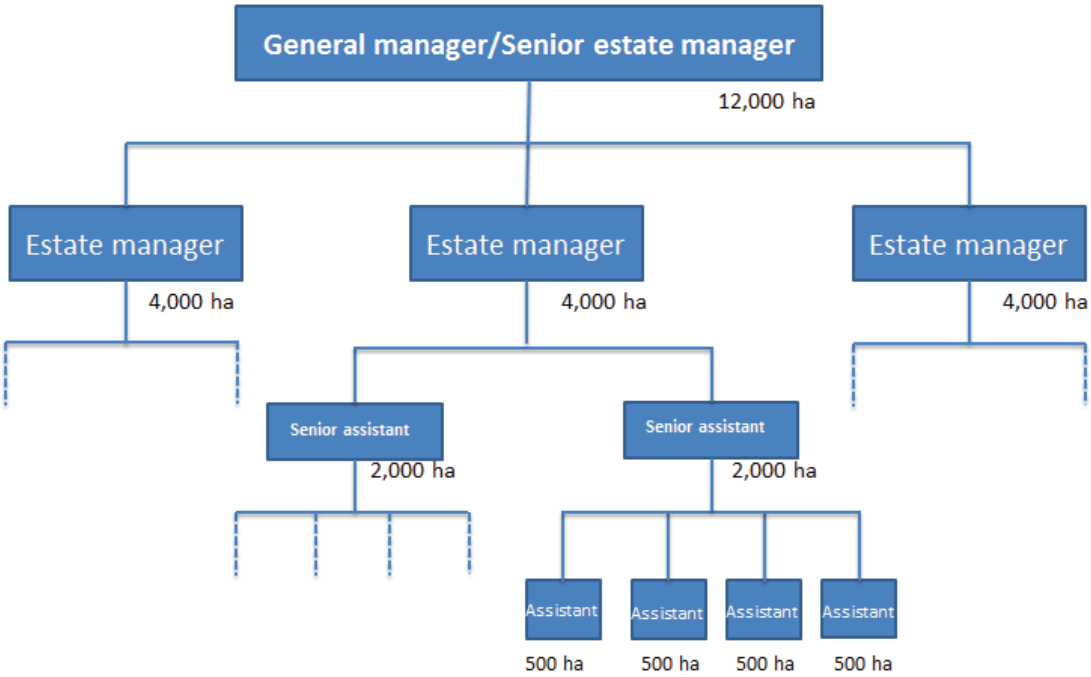

Figure 13: Different company subdivisions and surface areas of plantation managed.

Musim Mas set up a genetics and agronomic research centre in Sorek North, Estate II. The genetic department is in charge of seed production through tissue culture and conventional breeding, while the agronomic department is in charge of extension work, eg. soil and foliar sampling so as to recommend to date fertilization application for the oil palm, pest & disease management, water management and etc. The reason why Musim Mas has put in place a genetic and agronomic research centre at Sorek is basically to increase productivity and best management practices through production of its own planting materials , and to improve on its current yield through better manuring recommendations. According to the head of the genetics and agronomic department, the company is currently incurring huge expenses from the purchase of F1 progenies (seeds) from other certified companies. The current yield from these seeds bought outside stands at 5-6 t CPO/ha/yr. According to the head of the research, the company wants to step up the yield of its oil palm plantations to 6-7 t CPO/ha/year through its R&D Department. Seeds produce by the company will be available to public once it obtains the necessary certification required by law.

Processing Department

All palm oil mills within Musim Mas Group are under the Processing Department. Currently Musim Mas Group has 8 palm oil mills and all of them are facilitated with methane gas capture plant from its waste effluent to produce green electricity and the cost for the installation of Sorek North methane gas plant stands at about Rp. 35 Billion. The methane capture plant is able to reduce the emission levels by some 65,000 metric tons of carbon dioxide per year. The steps in the processing of FFB to CPO & kernel and the methane capture and utilization plant are shown in figure 14 and 15 below.

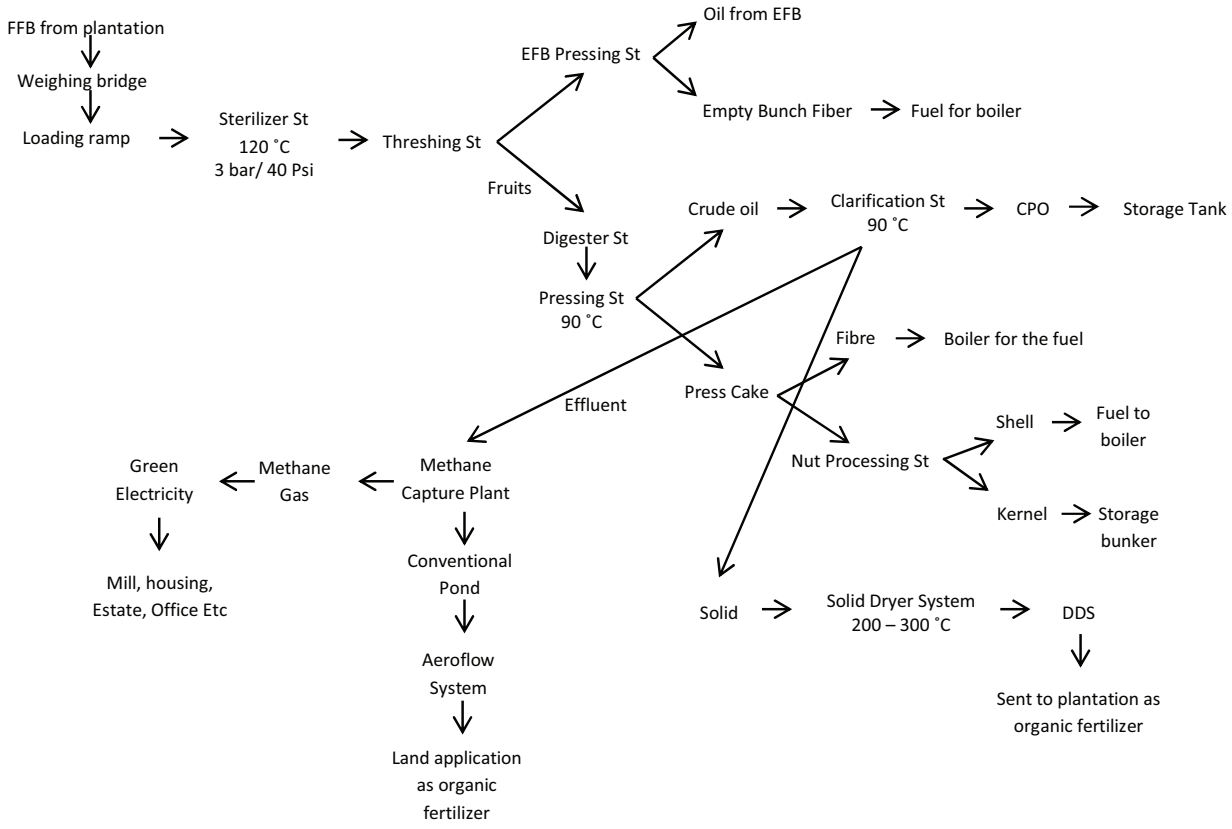

Figure 14: FFB Processing Leading to CPO Production.

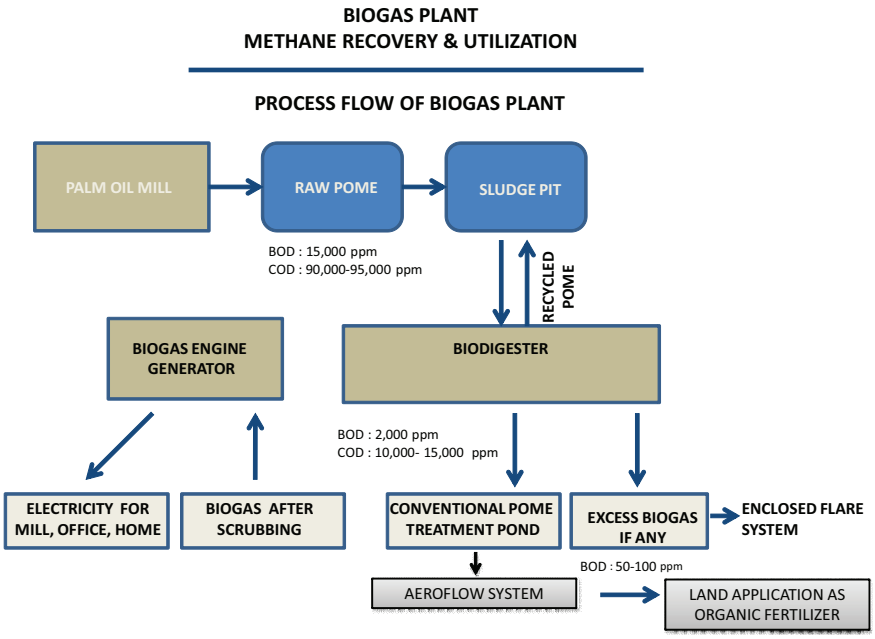

Figure 15: Methane Recovery and Utilization (Biogas Plant)

From fig 15 above, the final POME released to the environment has a biological oxygen demand (BOD) of 50-100 ppm which falls in line with government standard and the principles and criteria of RSPO and ISPO which recommend that the final POME released to the environment should not exceed 100 ppm or 5,000ppm for land application as organic fertilizer.

Note: The mill has a capacity of 90 t FFB/hr, and considering that it works for 15 hours a day, this implies it processes on average 1,350 t FFB/day.

The Biogas capacity is 110,000 m^3, the effluent flow ratio is 0.8 m^3/FFB x 1,350, which is equal 1,080 m^3 /day. Effluent Retention time equals 110,000 m^3/1,080 m^3 /day, thus giving 102 days.

The biogas plant is able to capture = 30,000 m^3 gas/ day, and the quantity of gas is capable of generating 60,000 KWh electricity per day. The diesel generator uses 0.275 litres/KWh which is equivalent to 0.5 m^3 gas utilization. If 0.5 m^3 gas is equivalent to 0.275 L diesel, it implies 30,000 m^3 gas produced by the methane gas plant per day is able to generate an equivalent of 16,500 L of diesel.

At first, before the development of the Biogas plant, the company used to consume 100,000 L of diesel/month, as supplement (excluding the utilization of palm fibre for the boiler) to electrify the mill and the estates and the cost of diesel was 9,000 Rp (0.65€) /Liter. This implies the company spent Rp 900 million (65363.23 €)/month for diesel consumption. But today the biogas plant is capable of generating an equivalent of 495,000 L of diesel /month which is almost a five-fold production of what the company used to consume years back.

Percentage consumption of energy produced at the Biogas plant =100,000/495,000 x 100, which will give 20.20% (The excess gas produced at the Biogas plant is burnt on the Flare, and this constitutes an enormous waste of energy). The cost to Install the Biogas plant = Rp 35 billion (2,541,903.28€). Note that return of investment (ROI) does not consider operation and maintenance cost and bank interest.

Estate Department

Musim Mas estates are practicing Good Agricultural Practices and as part of Integrated Pest and Disease Management, beneficial plants are used by the company to provide alternative feeding sites for the predators which help to reduce the population of insect pest (larvae).

These beneficial plants include *Euphorbia heterophylla* L., *Elephantopus tomentosus* L., *Cassia tora* L., *Turnera subulata* L., *Vetiveria zizanioides*. With regards to predator insects which feed on the larvae which usually pose threats to the leaf tissues of the oil palm, we have: *Systropus roepkei*, *Brachymeria iasus*, *Dolichogenidea* spp. The use of Cordyceps to eliminate some insect pests, the use of barn owls as predator for rats, squirrel, etc.

The ban of paraquat by the company was a major move, because the chemical can cause the death of individuals who use it. According to the Centre for disease control and prevention in USA, ingesting paraquat may cause symptoms leading to organ failure (liver, lung, heart, kidney, etc.) within days. It is important to note that paraquat is a very important herbicide used in controlling a wide spectrum of weeds in more than 100 crops, including soybean and oil palm.

Mill and estates workers are protected from hazards of noise, pollution through the following: the putting on of safety shoes, earplug, helmet, dust respirator, safety belt, safety harness, apron, hand gloves, welding cap, etc.

PT Musim Mas is the first agro-industry in Indonesia to achieve 100% RSPO certification for all its upstream companies. In January 2013, Musim Mas became the first plantation to be awarded the certificate for Indonesian Sustainable Palm Oil (ISPO). The company has also stopped the planting of new plantations on carbon stock land such as: primary forest, HCVF, new peat lands. About 55% of the total mills emission comes out through methane gas and trapping the gas can reduce emission for up to 15% of total emissions. The biodiesel produced by Musim Mas has a carbon dioxide emission rate which is 60-70% less than fossil fuels, which is much higher than European Union's Renewable Energy Directives (EU RED) current requirement of 35%. Note that RSPO certificate must be renewed once after 5 years. Within this 5 years period, the RSPO team will visit the company yearly to ensure that the company complies to the principles and criteria of sustainable production.

KKPA Sorek North and South

The development of KKPA Sorek North by Musim Mas took place in 2000-2003, 2005-2009, while Sorek South took place in 2003, whilst Musim Mas *inti* (*nucleus* estate) plantation was established in 1991. The KKPA projects were developed on Musim Mas initiative as the *nucleus* estate project was developed before the 1997 decree. It is part of Musim Mas commitment to the local community to grow together.

KKPA Sorek North is made of 9 farmer groups located in 5 villages, with a total planted area of 864 ha, while KKPA Sorek South has 4 farmer groups located in 2 villages, with a total planted area of 802 ha as shown on table 28 below. The KKPA Sorek North and South are headed by two separate cooperatives, under one scheme smallholder management at the level of Musim Mas Sorek.

Table 28: The different groups in KKPA North and South Sorek

Groups in KKPA North	**Planted area (ha)**
Kelompok Tani (KT) Sialang Kembar Sorek I	98
KT Bina Bersama Batang Kulim	78
KT Suka Damai Betung II	34
KT Suka Maju Betung I	130
KT Suka Damai I Tanjung Beringin	102
KT Tunas Harapan Talau	80
KT Kurnia Baru Sorek I	150
KT Suka Maju Betung I Tahap II	166
KT Suka Damai Betung II Tahap II	26
Total	**864**
Groups in KKPA South	**Planted area (ha)**
KT Tunas Harapan	182
KT Tenggiling Jaya	266
KT Rawa Indah	238
KT Payo Atap Makmur	116
Total	**802**

Source: 2013 field work

Structure of the KKPA cooperative

The KKPA cooperative is headed by a head of cooperative, and assisted by the secretary and the treasurer. Under these persons are the farmer group heads. These farmer group heads directly oversees the day to day management of the KKPA plots of his group, and reports any grievances or proposals to the head of the cooperative. All management officials from the head of the cooperative to group heads are elected for a duration of 3 years, renewable depending on output. All matters in relation to the management of the cooperative are channeled to the head of cooperative, and in his absence, the secretary of the cooperative takes total charge of his duties. The treasurer takes charge of the recording of all financial transactions both within the cooperative and between the cooperative and external parties like the company, bank, etc. The treasurer is also in charge of the cooperative's account, he keeps

a record of money that enters and leaves the cooperative account. The organizational chat of the cooperative is shown on figure 16 below.

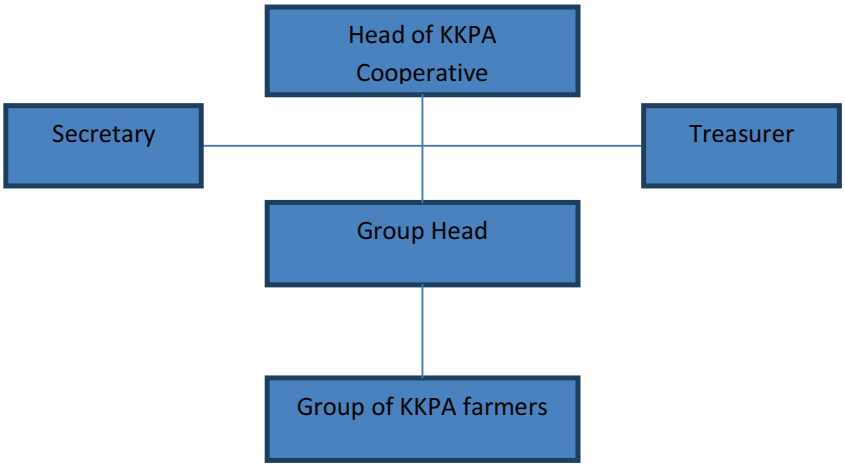

Figure 16: The Structure of the KKPA Cooperative

The mechanism of the KKPA scheme with Musim Mas

In principle the loan for the development of the KKPA plantation is agreed between the Bank Rakyat Indonesia (BRI) and the KKPA cooperative. When the bank hands over this loan, it is paid to the company's account and managed by the company and acknowledged by the cooperative (both must sign together). Before the bank gives out this loan, the company is supposed to submit a work plan for the development of the KKPA plots to the *Bupati* (Head of Regency). This work plan provides cost estimation for the different operations to be implemented by the company on KKPA plots. Only after the approval of the work plan by the *Bupati* is the loan delivered by the bank. The company then uses the loan for the development of KKPA plots. After development, the company manages the plot for the next four years then it hands over the management of the plots to the cooperative once the palms have entered into production. At this time, the company still has to provide technical support and assistance when needed. The handover of the management of the KKPA plots to the cooperative must be validated by the authorities of the District under control from the Bank.

In Musim Mas Sorek, the situation was a bit different because the company used its own funds to develop KKPA plots, including 4 years of plot maintenance. In PT Musim Mas there

is no difference in maintenance standards and agricultural practices between the estate and the smallholders' plots. Once the plantation was handed to the cooperative, the cooperative then borrowed the same amount of money from the bank to pay the cost incurred by the company to develop and maintain the KKPA plot for 4 years and the cooperative must reimburse this money to the bank plus interest. The company and the cooperative pay for establishment of land certificates, or the individual plot holders at the BPN (Department of national land affairs) and hand this to the bank to serve as collateral. The memorandum of understanding or agreement initially signed between the company and the cooperative head before the company began with the development of the KKPA plot defines the obligations of both parties in the joint venture. This document is also endorsed by the secretary of the cooperative, the group heads, Agriculture Department, Cooperative, the sub district head, as well as the district head.

Land transactions

Most land owners who surrendered their land to the company for the development of the KKPA scheme did not have land certificates at the beginning of operation. In the absence of any official land title, the document which proves that the land belongs to a given person is called the *Surat Keterangan Kepemilikan Tanah* (SKKT). This document is issued by the village authority, signed and approved by the village chief (head of *Kelurahan*). The company, together with the head of the KKPA cooperative, pays the costs for the establishment of individual land certificates which are handed to the Bank. The land certificates of the KKPA farmers are kept by the Bank until the farmers have completed the repayment of their loan to the bank through the regular supply of FFB to the company's mill. Once the farmers have erased their debt, the land certificates are then handed to the head of the cooperative. The sale of land from one person to the other is common, especially when the palms have not reached maturity or are still in their early years of production. Some of the farmers sold their plots probably because they were facing financial problems or were skeptical about the eventual profitability of the crop, and this sale is usually not reported to the company.

The sale of land outside the KKPA plot occurs as follows. First the buyer meets the land owner, as soon as he accepts to sell the land, the buyer is taken to the quarter head. The quarter head will further inform the social leaders of the area (religious leaders, leaders of tribal meetings, etc.). Farmers who share boundaries with the land for sale also attend. When they have reached an agreement, the next step is a visit to the village head (or chief). The

chief will further issue a letter which is also supposed to be signed by the sub-district head. If the individual wants to get a land certificate on the said piece of land, the letter signed by the chief and sub-district head is submitted to *Badan Pertanahan Negara* (National Land Body), which issues the land title. With respect to the selling of a KKPA plot, the situation is very similar with what obtains above. This will normally involve the prior notification of the head of the cooperative, the head of group, as well as *kapling* boundary members.

Development of the KKPA plots by the company

The company is fully in charge of the development of KKPA plots for the local population. The KKPA plots are distributed in 5 different villages for Sorek North and 2 villages for Sorek South. In order to develop the *plasma* plantation for KKPA farmers, the company attributes different operations to contractors like forest land clearing, felling, lopping, windrowing, lining, digging, drains, planting, creation of roads/bridges leading to the site, and subsequent maintenance for the next 4 years. In such situations, the cooperative itself can also be hired in order to act as a contractor when needed. Within this period, the cooperative will settle any land dispute that may arise between individuals. At the early stages of palm development the fertilization program is based on company standards: there is a specific fertilizing program for the immature phase, and then when palms become mature, the company through its Research and Development Department carries out soil and leaf sampling on the different blocks in order to recommend optimal fertilizer rates. The R&D Department also helps in analyzing the quality of the purchased fertilizers (by the KKPA or by the company itself) to ensure the quality and consistency to the agreed specifications. All purchased fertilizers are handed to the cooperative for onward distribution to the farmers through their group heads.

The handing of the KKPA plantation to the cooperative

After 48 months, the KKPA plots are handed over to the cooperative. A management team comprising the district Agriculture Department, the Bank and the head of cooperative, come and inspect whether the *kapling* plots are ready to be handed over to the *plasma* cooperative. In the case of Musim Mas Sorek the loan agreement is signed between the cooperative and the bank at this period. The bank then refunds the cost of developing the *plasma* plot to the company and the cooperative is now in charge of the repayment of the loan plus the interest to the bank. The Government of Indonesia contacts with three banks to make loans available to cooperatives under the KKPA scheme. These banks are namely BNI (Indonesian National

Bank), Bank Mandiri and BRI (Bank Rayak Indonesia). The government subsidizes the interest rate of the loans through the banks. It is important to note that even if the management of the KKPA plantation is handed to the cooperative after 4 years, the cooperative management is still a novice when it comes to oil palm plantation management and as such the company has to intervene in providing the necessary management, technical and research advice needed for the smooth functioning of the cooperative/KKPA plantation. Training is given to each *Kelompok Tani* (KKPA farmers belonging to a group under the control of a group head) by the Copanu's training department once a year done on a monthly basis to all *Kelompok Tani*. Company builds capacity of farmers through cooperative, and provides a monthly work plan through the company department in charge of smallholders which comprises one smallholder manager and two field assistants under him, to the cooperative stressing priority operations to be executed for that month. The company regularly supervises field operations in the KKPA plot in order to provide technical advice where needed.

With respect to the recruitment of labor for the daily maintenance of the plots, the cooperative hires labor depending on the operation at hand. The plot owner together with his family can also fill that gap depending on whether they have the skills needed to perform the operation at hand. In such situations group heads become very instrumental. The group heads ensure that the various farm operations are executed on time based on the work program handed to the cooperative from the company department in charge of smallholders. The operations performed in the plots are shown on Table 29.

Table 29 : Different operations performed in the KKPA plot.

Operation	Frequency
Slashing/chemical weeding	2 to 3 times a year
Fertilization	6-7 times a year
Harvesting/transportation to mill	3 times a month
Pruning	2 times a year

Source: 2013 field work

According to the fertilization program handed by the company to the KKPA cooperative for 2013, a total of 10 kg of different types of fertilizer is recommended for 13-year old palms. The cost of fertilizer is very high as it takes about Rp. 6 million to fertilize one hectare of mature palms per year. Apart from urea, which is produced locally in Indonesia, the other type of fertilizers must be imported from other countries. Even after the KKPA farmer

completes the payment of his credit, the cooperative continues with the management of the KKPA plot. An example of fertilizer recommendation from PT. Musim Mas to a given block of KKPA Sorek North for 2013 is shown on Table 30. According to recommendations given by the company to the cooperative for that year, the cooperative will deduct the cost of purchase from the income of each *kapling* owner and it is an obligation for the *kapling* owner to apply the fertilizer.

Table 30 : Fertilizer recommendation from Musim Mas to Kelompok Sialang Kembar Sorek I, for 2013.

KKPA	Desa	Block	YoP	Ha	Jan		Feb	Mar	May	Aug	Sep	Total (Kg)
					Kies	HG FB	MOP1	Urea1	RP	MOP2	Urea2	
Tahap I	Sialang Kembar	A1	2000	70.0	1.5	0.1	2.25	1.5	1.5	2.25	1.5	**10.6**
		A2	2000	8.0	1.5	0.1	2.25	1.5	1.5	2.25	1.5	**10.6**
		A3	2000	20.0	1.5	0.1	2.25	1.5	1.5	2.25	1.5	**10.6**

Source: 2013 field work

The harvesting and evacuation of bunches to the company's mill

The harvesting and transport of bunches to the company's mill for a block is done under the supervision of the group head. He ensures that bunches harvested from a given *kapling* are weighed upon completion and the total tonnage is correctly registered under the name of the *kapling* owner. He also ensures that all the *kaplings* of the block are completely harvested at the appropriate time (i.e. at 10 days interval). The truck transporting FFB to the mill is provided by the company but the cost of transportation is charged to the KKPA farmers through their cooperative. The company also controls the harvesting operation through staff from the Smallholder Department of the Company, and the idea behind this is to ensure there is traceability of bunches that enter the mill since both Musim Mas Sorek and its KKPA cooperative are RSPO-certified. In order to keep the quality of the CPO high and improve the oil extraction rate, stringent quality control measures are put in place in order to ensure that only ripe bunches are harvested, with the evacuation of these bunches and loose fruits from the field within 24 hours after harvesting.

When bunches leave the KKPA plot, the weight of bunches, the plot and the day of harvesting are written on a delivery order ("DO") slip. The group head occasionally accompanies these bunches to the company mill. Once bunches arrive at the mill, the delivery order is handed to the security officials at the mill's gate. The security official signs that the said vehicle with FFB did arrive the mill at this given time. Next, bunches are taken to the weighbridge, where

the gross weight is taken. From the weighbridge, the driver then transports bunches to the loading ramp. At the ramp site, he then hands the delivery order to the assistant at the ramp, who also signs, testifying that the said vehicle brought bunches to the ramp on this date and at this time. The driver then offloads bunches at the ramp. When bunches are offloaded they are then subjected to quality control procedures. Depending on the quantity of bunches graded during quality control procedures, a premium of up to 4% above the agreed prices is paid to KKPA farmers. The group head must also ensure that all the loose fruits collected after harvesting are transported to the mill in order to increase the group's chances of being awarded a 4% premium. The company also makes sure that all the bunches (together with loose fruits) are transported to the mill within 24 hours after harvesting the KKPA plot. This control, together with the extraction efficiency of the mill, increases the quality and quantity of CPO produced after processing at the mill with an OER (Oil extraction rate) of between 24-25%, and FFA (Free fatty acid) level kept as low as 3%, as observed from secondary data from Musim Mas Sorek. FFA is the quantity of acid that accumulates on the tissues of the FFB over time immediately after harvesting. That is why it is advisable that FFB are processed within 24 hours after harvesting, because the more the fruits are overmaturing, the more the percentage of FFA increases.

After off-loading at the ramp, the empty truck is driven back to the weigh bridge to get the net weight. After getting the net weight, the weigh bridge prints out 3 delivery letters, of 3 different colors: one is handed to the driver, the other to the mill, and the last copy is sent to the head office in Medan. The copy that is handed to the driver is further handed to the estate office. The estate further duplicates this copy and hands a copy to the cooperative. It is important to note that in the course of weighing the FFB at the level of the mill, the net weight of bunches may be higher when compared to the net weight that was registered in the KKPA plot. When this happens, the surplus weight transformed into monetary terms plus the 4% premium is handed to the group and the group further saves this money in its account. It is from this account that group members will borrow regulated amounts to pay back later at low interest rates and short duration of reimbursement. On the contrary, when a reduction in net weight is recorded at the weighbridge when compared to the weight that was registered at the KKPA plot, the deficit is charged to all the members of the group. This implies that all group members will be penalized through a reduction on the weight of bunches that came out of their plot for that month.

Considering these procedures, it is not surprising to see long lines of trucks queuing at the entrance of the mill, each one being eager to deliver its FFB, but being delayed because of all the transactions that must be accomplished at the mill. The queuing at the mill results in additional cost and a reduction in the weight and quality of FFB in case the truck has to wait for one or more days before eventually supplying the FFB to the mill. The queuing is also aggravated by incoming tankers, which come to collect CPO for sale or evacuation to other downstream industries. There are generally two peak crop season in a year and each peak lasts for 2-3 months. During these peak seasons, it is normal to see jams of trucks at the mill gate as already mentioned above.

The reimbursement of the loan to the bank

The loan borrowed to develop and maintain a *kapling* (2 ha) for KKPA Sorek North stood at Rp 68 million (4,938.55€) in 2000, while a total of Rp 77 million (5,592.19€) was used to develop and maintain a *kapling* for KKPA Sorek South up to maturity in 2003. Changes in operational cost in the free market from one year to another accounted for the differences in developmental and farm maintenance cost.The loan was granted by the Bank with an interest rate of 15%, and farmers had to complete the payment of their credit plus interest within 6 years. Given that the credit for KKPA North Sorek stands at Rp 68 million (4,938.55€) with a flat interest of 15%, the total credit plus interest will increase to Rp 78.2 million (5,679.34€). Given that the duration for complete payment was 72 months (6 years) and the payment begins in year 4 after the palms would have entered into production. This implies under normal conditions a KKPA farmer is asked to re-pay:

Monthly credit reimbursement = (credit+ interest)/72 months

= 78,200,000 Rp (5679.34€)/72

= 1,086,111.11Rp (78.88€)/ month

A deduction is applied as follows: when KKPA farmers supply their FFB to the Company, the Company deducts globally 30% from the gross income generated by the sales of FFB to the Company for that month. This deduction is applied to all KKPA farmers belonging to different groups in the cooperative, and this amount is used for the monthly re-imbursement of the credit plus interest owed to the Bank. On a monthly basis the 30% deduction must meet the target for that month and if the target is not met for a given month, the company in consensus with the cooperative can deduct an additional amount from the 70% remaining

gross income, since priority is given to loan reimbursement. The next deduction that follows pays for the different farm operational costs that were incurred for that particular month. Also a global deduction is subtracted from the 70% remaining gross income after a consensus between Company officials in charge of smallholders and officials of the Cooperative. It is important to note that both Company officials on one hand and Cooperative officials on the other must endorse these two deductions (deduction to repay bank loan and deduction for farm operational cost for that month). The cost of the different farm operations for that month is further distributed or partitioned to the different groups by cooperative officials based on the different expenditures registered per group for that month. This being done, cooperative officials will then pay the net income to the KKPA farmers based on the supply of FFB/expenses that came out of the *kapling* of each farmer. This money is collected at the end of the month by the group head and handed to the members. It is important to note that cooperative officials from head office work hand in hand with the group heads in order to decipher what each *kapling* owner is supposed to receive at the end of the month. In handing this money to the KKPA farmers, the group head takes time to explain the different deductions that were registered for the entire block and for each individual farmer, as a way to ensure transparency in management. Table 31 shows the various deductions recorded in for some plots in KKPA Sorek North (May 2013).

Yields obtained in KKPA are quite encouraging and very little difference could be noted between performance of KKPA and that of the *inti* owned by the Company. This is a direct result of scrupulous management that was put in place during plot development to date. In 2011, the average yield per block of palms planted in year 2000 in KKPA North ranged 25-28 t FFB/ha/yr, while in 2012, the yield per block ranged 26-30 t FFB/ha/yr. Meanwhile a closer look at the company's yield gives a maximum yield of 30 t FFB/ha/yr.

As shown in table 31, cooperative manages 3 separate accounts. These include a monthly deduction for replanting, an obligatory saving, as well as *koperasi* fee. KKPA farmers, through their mandatory savings, can borrow money from the Bank through the Cooperative and repay with an interest of 10% from the deductions made from their supply of FFB to the company. Meanwhile the *koperasi* fee is used to compensate administrative staffs of the cooperative for the running of the Cooperative.

Table 31 : The net income after all deductions from 322 plot owners in KKPA North (May, 2013).

Operations	**Unit cost (in Rp)**	**Total (in Rp)**
Total FFB delivered (1,315,310 kg)	-	-
Income from FFB sale	1,449 Rp (0.11€)/kg	1,905,884,190Rp (138,416.38€)
FFB premium		64,269,091Rp (4667.59€)
Total FFB Sale		**1,970,153,281Rp (143,083.97€)**
Bank credit + interest	-	Repayment completed
Maintenance		3,150,542Rp (228.81€)
Fertilizer purchase		348,300,000Rp (25295.57€)
Harvesting		52,348,710Rp (3801.87€)
FFB Transportation		59,188,950Rp (4298.65€)
Loading Fee		17,099,030Rp (1241.83€)
Administrative Fee (Meterai)	-	18,000Rp (1.31€)
Management fee	5,000 Rp (0.36 €)/ton	6,576,550Rp (477.63€)
Fee Kooperasi	7 Rp (5.08×10^{-4}€)/kg	9,207,170Rp (668.68€)
Saving for replanting	100,000Rp (7.26€)/kpl/month	32,200,000Rp (2338.55€)
Land and building tax (PBB)	3,000 Rp (0.22€)/kpl/month	966,000Rp (70.16€)
Obligatory saving for cooperative members	20,000 Rp (1.5€)/kpl/month	6,440,000Rp (467.71€)
Total deduction cost		**535,494,952Rp (38,890.75** €)
KKPA income after deduction		**1,434,658,329Rp (104,193.22** €)
Net income per *Kapling*		**4,455,461Rp(323.58** €)

Source: 2013 field work

The sources of income for groups originate from the 4% premium paid by the company for the quality of FFB, and from the extra income that may occasionally arise from an excess weight registered at the mill when compared to the weight of same FFB on the block. Fixed sum of this money is borrowed to group members with minimal interest rates.

The pricing for FFB supplied by the KKPA farmers to the Company is decided on a monthly basis at the provincial level by a Committee that involves the Agriculture Department, Cooperative Department, GAPKI (an association of oil palm companies), a Representative of scheme oil palm smallholders, as well as provincial level authorities from other key ministries. The pricing of FFB takes into account the age of the palm, the production cost of transforming FFB by company into CPO, and the price of CPO on the international market. Meanwhile scheme smallholders benefit from such a regulation in pricing by the Government, independent smallholders are left in the hands of middlemen/agents who decide the price for FFB.

The Cooperative is mostly comprised of native Malays and it is male-dominated, since males are the head of households. But when the household head is no longer alive, he is automatically replaced by the wife or by one of his eldest sons. The age group is made of people from 30 years and above and most of them make a living from farming. When the sale of a *kapling* occurs, a priority is given to the natives, but if no buyer can be found, outsiders (usually migrants) may buy the *kapling*. The KKPA scheme clearly gives preferences to the locals. Even when a local decides to sell his *kapling*, priority is still given to a local before the *kapling* can be sold to a migrant.

In terms of educational level, a large majority of KKPA cooperative members are primary school leavers, while others never went to school. In terms of religion, all KKPA members are Muslims.

In earlier years before the 2007 Government decree N° 26/ *Permentan*/ OT.140/ 2/ 2007 article 11, the Musim Mas Company treats scheme smallholders as in CSR projects in which the company's main intention is to raise the standard of living of the local community surrounding the plantation. In doing so, the company and the community are working under harmonious relationship. The scheme smallholder enjoys a guaranteed pricing for his crop while the company benefits from a constant supply of certified sustainable raw material. This is clearly a win-win partnership. When the law was implemented, the company continued to ensure that the inputs and quality standard that the company adheres to cascaded to the KKPA.

Other oil palm production systems include the semi-independent smallholders and independent smallholders.

Semi-independent smallholders are made of scheme smallholders who use their extra income to develop oil palm plantations out of the scheme area and use the knowledge gathered from their involvement in the KKPA cooperative to manage their new plot. The planting materials for this new plot are bought either from companies that produce seeds or from persons who buy from these companies and sell to them. The quality of this planting material is often doubtful especially if the material is not supplied by a certified seed producer, as the yield from these plots can never be comparable with the yield from scheme plots. When it comes to the fertilization of these semi-independent plot, they mostly use the rates of the scheme plots to fertilize the semi-independent plot which may lead to over or under-dose application of fertilizer. When it comes to the sale of FFB coming out of their semi-independent plot, they are forced to sell the FFB to another company through the middleman. The sale of FFB from either the semi-independent or independent plot is forbidden by Musim Mas as a way of avoiding the contamination of certified CPO with uncertified CPO, since Musim Mas together with its KKPA cooperative are certified with RSPO. This is easy to check for KKPA farmers of the same block. The production per plot (*kapling*) per month is not supposed to differ much, provided all plots were adequately fertilized.

As such the semi-independent smallholders have to sell their FFB to middlemen or agents working under these middlemen, since they cannot sell directly to the other palm oil mill which buys these FFB, because they do not have a signed contract with the palm oil mill . Alternatively, they can buy the delivery order from the middleman himself or an agent working under the middleman, in order for them to supply their FFB directly to the company. The purchase price of these palm oil mill are always lower than what Musim Mas pays for FFB from scheme smallholders, since the pricing is at the discretion of the palm oil mill and the middleman.

Pak Samsumer is a native of the area and group head of Sorek South KKPA cooperative. He owns 3 kaplings in the KKPA plot, 1 is registered under his name and the other 2 are registered under the name of his children. He also owns 4 ha of palms out of the KKPA plot, as such, he is qualified as a semi-independent smallholder. The seedlings for the semi-independent plot were bought through a middleman who claims to buy seeds from Medan. He uses the same fertilizer rates of his kapling to fertilize his semi-independent plot, but this is not done regularly because of financial constraints, since he complains that the price of fertilizer is expensive and not subsidized by the government. He uses partly family and hired labour for the operations in the plot. He sells the FFB from his semi-independent plot to a

middleman /agent at 1000 Rp (7.26×10^{-2}€)/kg, and this produce is carried by the middleman to sell at PT Sari Lembar Subur. In relation to the monthly income coming from oil palm cultivation, he says that he gets a net income of Rp 4 million (290.5€) / kapling and Rp 5 million (363.13€)/ 4ha from his KKPA plot and semi-independent plot respectively.

Independent oil palm smallholders suffer the same effect as their semi-independent counterpart. Their case is even worst because many at times they have limited knowledge on the cultivation of the crop. And so may face difficulties to accessing quality planting material, management, as well as fertilization. Meanwhile some scheme smallholders with the help of the respective companies with whom they are in partnership have undergone certification with RSPO, the reverse is true for independent oil palm smallholders in the area, as none of them are certified with RSPO.

Pak Harto is an independent oil palm smallholder and a migrant from Medan and now resident in Batang Kulim. In 1998 he bought 4ha of land, which he paid Rp 4,000,000 (290.5€) and the land is located 3km from the main road. He decries that as the years are passing-by the cost of land in the area is increasing rapidly. Asked why he did not join the KKPA scheme, he says that his land was already planted with oil palm before the scheme started in 2000, he further stressed the fact that priority was given for the native population as opposed to migrants. In his 4ha land planted with oil palm, he got the capital from personal savings from his previous job in Medan. He also says that he personally bought the seedlings from Medan and did the nursery himself. Concerning the application of fertilizer, he says that he applies fertilizer once a year, and he uses the rates of the other farmers in the area. He practices monocropping, and hires labour to perform some of the delicate aspects of farm operations like harvesting and pruning. Concerning the production of FFB from his farm, he says that his 4ha plot is able to produce on average 5 tons of FFB/month and he sells these FFB to the middleman at Rp 1000 to 1200 (7.26×10^{-2} to 8.72×10^{-2}€)/kg.

Middlemen buy FFB from either semi-independent plots or the plots of independent oil palm smallholders and sell to various companies. They usually have to sign a contract with the company and this contract often stipulates the quantity of FFB that they must supply to the company each month. The company is the one to decide the price paid to the middleman, and based on the price decided by the company, the middleman calculates the maximum price to buy FFB from the smallholders and transport to the company. These middlemen often have

agents who work under them and in return are paid based on the quantity of FFB delivered to the company.

Pak Harimin has a legal contract with PT Bratasena for the purchase of FFB from oil palm smallholders and supplying to the company, and this contract stipulates that he must supply at least 300 t FFB/month, and so he is in possession of a "DO" given to him by the company. He is not a local of the area but a migrant from Medan. He has to travel for a distance of about 30km from his residence just to buy FFB from farmers. He owns one truck and rents another, each truck having a capacity of 8 tons FFB/trip to the company. He pays Rp 100 (7.26×10^{-3}€)/kg for the truck that he rents and Rp 30 (2.18×10^{-3}€)/kg as cost of loading. He buys bunches from the smallholders at Rp 1000 (7.26×10^{-2}€)/kg and sell to the company at Rp 1250 (9.08×10^{-2}€)/kg. He pays the farmers in cash in order to avoid the tendencies for farmers to divert their produce to other middlemen or agents. He also says 5% of the total FFB supplied to the company each month is deducted for administrative cost and the FFB supplied to the company must be up to standard.

5.5 DISCUSSION

5.5.1 The pros and cons of Southeast Asian models

Land allocation for scheme development

Under the FELDA scheme, the Federal Government authorizes the State Governments to hand over a certain quantity of land for the development of FELDA villages and settlers' plots in accordance with the 1960 Land Act. FELDA, when established in 1956 was a funding institution for the various agricultural development schemes managed by State Governments. By 1960, FELDA was given the power to acquire, develop and manage land for selected settlers.

Under the PIR scheme, the Indonesian Government installed a prerequisite to both public and private agro-industries wishing to develop oil palm plantations: this was to integrate the local/transmigrant population in their development agenda and provide land permits and funding subsidies to them. Seventy to eighty percent of the total land handed to the Company was requested to be developed for the local /transmigrant population or the plasma plantation. Meanwhile 20 to 30% remained the property of agro-industrial companies, and was named the *nucleus* estate plantation (Zen et al., 201 0).

Under KKPA scheme, priority was given to the local population to join the scheme, since most of locals were reticent to abandon their previous livelihood activities to join the PIR scheme. The conception of the KKPA scheme has greatly helped to reduce the social conflicts that used to exist between locals and transmigrants on land ownership issues, but the condition here is that the locals wishing to join the scheme must own some land. The major drawback of KKPA is that locals who do not own land cannot be part of the scheme. With the decentralization of power to District Government in 1999, district level authorities have been very instrumental in the location of the area where companies could develop oil palm plantations, environmental and social impact assessments, socialization between agro-industries and the local population, and the provision of business permits to the agro-industry (McCarthy and Cramb, 2008). This decentralization of power to the district government is important as district government officials can easily interact with their population in order to decide on the kind of development projects to stimulate and implement. It also has its own shortcomings as some of the districts lack the capacity, human and material resources to effectively have a proper vision on these developmental projects (Zen et al.,2008; McCarthy and Zen, 2010). Cases of collusion have been reported between District authorities, elites and company officials at the detriment of smallholder cooperatives (Gillespie, 2011). The percentage of land respectively owned by the Company and the KKPA farmers is now reversed, with 70% of the total land falling in the hands of the companies and 30% belonging to KKPA farmers (Feintrenie et al., 2010). The situation is even worse for newer *kemitraan* scheme with an 80:20 ratio of land ownership in favor of agro-industries. Companies are in favor of this land ratio because the loan they borrow from the bank must be repaid at the appropriate time, the yields of plasma plantations are most often lower than those of the nucleus estate, and the sale of bunches by plasma farmers to “middlemen” can jeopardize the reimbursement of credit (Zen et al., 2008).

Selection of scheme beneficiaries

Under FELDA scheme, rigorous selection criteria were applied in order to make sure that only the targeted beneficiaries were selected, with little intra-population conflict registered. Those selected had to be physically fit, married, landless or own land that is not of economic size (Simeh and Ahmad, 2001). They should be in their active age group, and must have gained experience in the practice of swidden and subsistence agriculture. In terms of ethnicity, FELDA favored the participation of the Malay ethnic group instead of settlers from Chinese or Indian ascent, thus leading to ethnic bias and political manipulation as FELDA today forms

the bastion of electoral and economic power for the Malay political establishment (Hamid and Henley, 2008). Other authors are quick to refute this allegation and contest that there was a high disparity in income levels among the different ethnic groups, with a greater negative impact on Malay ethnic group. Fold (2002) reports that the objective of FELDA was firstly to reduce poverty and secondly to reduce social differences between ethnic groups. The 1960 Land Settlement Act that governs the development of scheme areas does not specify any ethnic preference in the recruitment of settlers (Ghee and Dorall, 1992). The resulting uniformity in the ethnic origin of the settlers could nevertheless have played an important role in installing a harmonious life in the scheme village. Cohabitation could be problematic especially when settlers from diverse ethnic and cultural background live on the same scheme village, sometimes leading to "cultural shocks" (Sutton, 1977; Keong, 1981; Sutton, 1989).

The PIR scheme also gave priority to the landless poor when applying to be part of the scheme. The scheme village under PIR was not very different from that of FELDA. The Ministry of Transmigration was in charge of the selection of transmigrants, while the agro-industry was in charge of the development of the *plasma* block. Cases of delays in the placement of selected participants were found to occur in both schemes, probably due to the fact that the farm plots or housing were not ready yet. The situation was different for the KKPA scheme, in which the local population did not need to move from their village of origin. The advantage here is that KKPA settlers are already familiar in their location of origin and they were linked by blood relationship with nucleus and extended family members. Apart from this, the locals did not have to relinquish their former livelihood activities after the arrival of oil palm. Land shortage is one of the problems that may arise since some of the villagers had sold their land before the arrival of the scheme, and as such they were not entitled to be part of the scheme.

Selection of crop(s) and crop diversification

The FELDA started from its inception with the cultivation of perennial crops (Hamid and Henley, 2008). The first schemes were developed through rubber cultivation but when rubber underwent a price slump, the scheme incorporated oil palm. Apart from oil palm and rubber, other perennial crops planted by FELDA included cocoa, coffee and sugarcane, but a great majority of FELDA schemes were planted with oil palm as the price was thoroughly more favorable on the world market together with other advantages such as lighter labor and input requirements. Crop diversification is important in a scheme because if the global price of one

given commodity drops, the other crops can still provide some income for the farmer. The difference from the Indonesian transmigration scheme is that priority was first given to the cultivation of rice and only later to rubber and oil palm (Zen et al., 2010). As a way of securing food self-sufficiency in the FELDA and PIR schemes, a small portion of land was left for the cultivation of food crops. Meanwhile in the KKPA scheme, oil palm and rubber are also the most sought after crops. None of the schemes permitted any intercropping with food crops in the aim of preventing any adverse effect on oil palms when palms finally entered into production.

Scheme development and management

FELDA was responsible for the development of the plot for the settler while the settlers were supposed to provide labor force to the plantation. In early FELDA schemes, settlers were asked to provide labor for the construction of their house, jungle clearing and oil palm planting. When FELDA realized that the services provided were not up to standard, with a massive withdrawal of settlers, FELDA decided to subcontract such early operations to contractors. Delays in the provision of some services led to delays in the placement of selected settlers into the scheme village. FELDA also adopted different management methods for the palm plots in order to improve productivity. The first management method implemented by FELDA was the individual system of plot management. Here the farmer had to manage his 4-ha plot, with instructions from FELDA field staff. He could also work along with his household if needed. But the quality of work done was mediocre and if the settler is sick, the plot was abandoned for days or more. This critical situation forced FELDA to move to the block system of plot management. In the block system, management provides the settlers with a training period with other block members on field operations under the leadership of an elected block leader. This change in strategy greatly improved settlers' skills in the execution of field operations, boosted productivity levels and avoided any disparity in income levels within blocks, since the total production of the block was divided evenly amongst block members (Massard, 1987; Ghee and Dorall, 1992; Fold, 2000). In case a settler is sick, the other settlers work for him and share the wage. Settlers were able to get paid wages for work done, income from group sale of FFB to FELDA mill, and bonus from overtime and work quality. It has also been reported that the block system of plantation management also reduced the sale of FFB to middlemen, since the settlers were not working and taking decisions as individuals but as a group (Sutton, 1989; Ghee and Dorall, 1992).

The implementation of the share system of field management had to face stiff opposition from settlers since they no longer had the possibility of land ownership after loan completion, even though it had the advantage of reducing inter-block income disparity and settlers were paid wages for work done, bonuses for overtime and work quality and dividends based on their four hectare holding (Sutton, 1989). Social cohesion was not only limited at the plantation level with respect to block members, but these block members also lived on the same neighborhood in the scheme village (Massard, 1987; Komoguchi, 1995). As soon as the palms get old and production drops, settlers are given the free choice either to replant themselves or to allow FELDA to do the replanting. But this opportunity for settlers to replant also generates problems of access to quality planting material and it also induces a fragmentation in the spatial distribution of plantations managed by FELDA. Moreover, some settlers can decide to replant under old oil palm stands and allow the young palms to get mature before they finally fell down the old palms. In first cycle FELDA plantations, FELDA was responsible for the development and management of the plantation for the settlers, using loan from either the national or a foreign bank that had to be repaid. While the settlers were supposed to provide labor either as individuals or a group when needed. In second cycle FELDA plantations, settlers are given the choice to either allow FELDA -Technoplant to continue with the management of their plantation, or manage their plantations by themselves under limited assistance from FELDA. Once settlers complete the repayment of their loan, they are issued a land certificate which covers their 4-ha plot, the house lot, and the fraction of land for food crop cultivation.

Under PIR scheme, just like under KKPA, the agro-industry is responsible for the development of the *plasma* plots, with funds from either the national or an international bank. Under the PIR scheme, the funds for the development of the *plasma* plantation are borrowed by the agro-industry and the *plasma* farmers will have to repay the credit when their plots enter into production. The *plasma* farmers are supposed to provide the labor force on their plots although they can group themselves into village cooperative in order to facilitate the harvesting and transportation of FFB to the company's mill. Land certificates are handed to PIR farmers upon full repayment of their loan. Under KKPA scheme all the villages whose population gave land for the development of the *plasma* plot will unite to form one cooperative. The management staff of the cooperative are elected and collects a loan from the bank and hand this money to the agro-industry for the development of the *plasma* plot. The cooperative will then work hand-in-hand with the Company in order to ensure that KKPA

farmers repay their credit. The land certificates that were established for holdings of the KKPA farmers are kept by the bank, and when the credit repayment is completed, the land certificates are handed to the Head of the Cooperative in order to prevent the sale of plots.

Stakeholders in scheme management

The management staff from FELDA not only act at the scheme level but also at the regional and federal level in order to ensure a strong institutional support to the scheme. There are also other Government Departments under the FELDA scheme that coordinate with FELDA for the wellbeing of the settlers (Chan-Onn, 1985). The bureaucratic machinery of FELDA is quite elaborate and this often results in administrative bottlenecks and delays in decision making (Keong, 1981). One important institution that secures settlers' participation in decision making and future of the entire scheme village is the JKKR. Within JKKR the fate of the scheme is not restricted to men's decision as in traditional Malaysian village administration, but here women also have the possibility of raising their hands. Besides this advantage women also benefit from short vocational courses from FELDA officials (Abdullah et al., 1987). While the JKKR is regarded as being relatively important in representing settlers interest, there are also complains about the quality of the leadership it provides. Part of the explanation for settler disillusionment with their own leaders lies in the system of selection of JKKR representatives. Also FELDA has not permitted settlers to take over the chairmanship of their own decision making body and this has had a negative impact on settler participation. Most of those dissatisfied have explained that FELDA authorities should only act as an adviser while leaving decision making to the settlers. Some settlers say that a social class difference between JKKR leaders was beginning to emerge inside FELDA schemes as there were more opportunities being made available to JKKR leaders to obtain FELDA contracts, loans and other social and economic benefits (Abdullah and Mohamad, 1987; Ghee and Dorall, 1992). Unequal access to information and influence can jeopardize the initial objectives of a joint-venture scheme, leaving customary landholders vulnerable to significant exploitation and losses (Cramb, 2012; Gillespie, 2012).

Under the PIR scheme the key institutions involved in the scheme include the agro-industry, smallholders organized in village cooperative and the central Government while under KKPA scheme, the key institutions are the agro-industry, the cooperative and the district Government.

The Cooperative

The Cooperative as an institution can be a very useful partner in the scheme because it stands as an intermediary body working on one hand with the company officials and on the other with the individual farmers. Managerial and technical capacity building can easily be transferred from the Company to the farmers through their Cooperative. Here the company does not need to deal with each individual farmer separately. The cooperative could also be the institution through which farmers can easily get access to quality planting material, inputs and loans from the agro-industry or the bank. Unfortunately when the cooperative management is composed of corrupt officials, this could be a snare to the farmers, since there would be collusion between Cooperative management and the Company officials at the detriment of farmers (Kurniawan, 2014). For this reason, there is a need for an independent monitoring of the cooperative business activity and a need for transparency and thorough communication between cooperative management and farmers. The Company can use its powers to trample down on the management of the cooperative if efficient oversight is not carried out by appropriate authorities.

FFB price setting

Under the FELDA scheme, the price of FFB is decided by MPOB while taking into consideration the price of CPO in the global market, the variety or origin of the planting material, the age of the palms and the oil extraction rate at the industrial mill. In Indonesia, the price of FFB produced by scheme smallholders was formerly determined by each agro-industry. Since 1998, things have changed and there is now a price control committee at the headquarters of each province that regulates on a monthly basis the price of FFB coming from scheme smallholder's fields (Gillespie, 2011). This Committee involves GAPKI (representative of the oil palm agro-industries at the provincial level), scheme smallholders represented by their cooperative and competent government ministries. The committee takes into consideration the age of the palms, the processing cost for FFB and the international market price for CPO. Even if scheme smallholders benefit from this price control committee, independent oil palm smallholders still rely on the price proposed by middlemen, since they cannot supply their harvest directly to the agro-industrial mill.

Scheme development cost

In FELDA, scheme development cost comes from the 4 ha plot development and maintenance at immature stage and the cost of construction of the settler's house. Other costs originating from infrastructure development and management are borne by FELDA. According to Chin (2011), 42% of the development cost is covered by the Government while each settler is expected to bear the remaining cost. The reimbursement of initial loan is carried out for a period of 15 years with a 6% interest. Under PIR and KKPA schemes, the farmer has to pay only the cost to develop and maintain the plasma plantation together with the management cost, while the cost of house construction is borne by the government in the case of PIR. The reimbursement of the loan is completed within a period of 6 years with 12% and 15% interest respectively. In all three schemes, the reimbursement of credit is implemented through the supply of FFB coming from scheme smallholder plantations to the company's mill. The total amount of money used in scheme development, the interest level, deduction modalities and transparency in deduction have often been a source of conflict between scheme smallholders and companies, especially in the absence of independent monitoring bodies. Some authors have reported that the Malaysian FELDA when compared to the PIR and KKPA schemes in Indonesia beared a higher developmental cost.

Labor

In FELDA, the selected settlers have to provide the labor force for scheme maintenance under the supervision of FELDA field staff. When the FELDA scheme started, the issue of labor scarcity was never a problem since the settlers were still young and energetic and took an active part in the maintainance of their plantation. But after a while some settlers started getting better income from their plots and became reluctant to work themselves and they preferred to benefit from off-farm businesses and then hire labor to work on their plot. The aging of most settlers and the exodus of settler's children to urban areas in search of semi-skilled and skilled jobs together with educational reasons has reduced their contribution to labor in FELDA schemes, especially for second generation plantings were some of the plots are managed by the settlers themselves (Sutton, 1977; Ngah, 1986; Din, 1989; Ghee and Dorall, 1992; Hussin and Abdullah, 2012). Even when the plots are handed to the heirs of a settler after his demise, they seldom provide the labor themselves on the plot and will prefer to hire workers for the maintenance of the plot. At present most of the foreign labor comes

from Indonesia and other neighboring countries like Nepal and Bangladesh, with some workers illegally living in Malaysia.

Under PIR scheme, the labor force is provided by the transmigrant with technical inputs from company field staff. But again the transmigrant may after a while get involved in other prosperous businesses and prefer to hire labor. This could lead to poor management of the plot. Under KKPA scheme, the maintenance of the plot during the immature phase is in the hands of the Company and when the palms start producing, the maintenance is transferred to the Cooperative with technical support from the Company. If the owners of plots are not residing in the village or are involved in other economic activities, they could hand over the maintenance of their plots to block heads or hire workers. Absentee plot owners may pose a problem for an effective block management, since they may not be able to attend periodic group meetings and learn about some urgent problems to be addressed. Besides, if an effective control is not done by the Company /Cooperative through their block head, the services of hired members may not be very efficient.

Assets and sources of income

Under the FELDA scheme, settlers own a house and a 4-ha farm holding which provides income from the sale of FFB to FELDA's mill. This is true for those settlers who are not under the share system of plantation management. Settlers also own shares in FELDA investment cooperative and get dividends at the end of every year. Dividends based on the size of the 4 ha plots for those whose plantations are managed under the share system, together with bonuses for overtime and work quality. They get paid wages for work done and personal/replanting saving, as well as income from off-farm sources. Hussin and Abdullah (2012) iterate that the migration of settlers from their original villages to the land scheme greatly had a positive impact on their socio-economic status. Under PIR scheme, transmigrants own a house and farm holding, and they benefit from the income generated by the sale of FFB from their plots. They also get a wage for work done, as well as saving and income from off-farming sources. In the KKPA scheme, farmers own their 2-ha plot and they get income from the sale of FFB to company's mill, they get paid wage for work done, compulsory saving plus replanting saving. At the group level, farmers benefit from a premium for bunch quality and extra weight of FFB at the weigh bridge.

Land conflicts

Land conflicts could be predominant when local communities feel cheated in the attribution of plots. During the establishment of the PIR scheme, the Government of Indonesia did not seek the opinion of the local communities. Most locals were not prepared to be part of the scheme since they already obtain income from the planting of lowland and upland rice, jungle rubber, hunting and fishing, etc. (Adnan and Yentirizal, 2007). Land conflicts can be mitigated when the land given to the settlers/farmers does not overlap with land on which local communities claim user'srights. Another way to limit land conflicts is to avoid the resettlement of people from other parts of the country who do not belong to the same ethnic group and do not share cultural background with the native population. When this occurs, then the local communities should benefit from land rents or get a certain percentage of the profit coming from the business deal. Meanwhile land sales can be avoided by not attributing plots to farmers when the palms are still immature, or when their loan has not been completely reimbursed. Farmers may be tempted to sell their plots to third parties since it takes about 3 to 4 years for the plantation to enter into production, and within this period farmers will need to have a secure source of income. For agro-industries another way to avoid land sales is to encourage the farmers to plant food crops in order to get income and food security during the immature period of their plantation (Paoli, 2014). Farmers may also be given some subsistence allowance when palms are still immature, which can be deducted gradually as soon as the palms enter into production.

FFB sale to middlemen

Farmers sell their FFB to middlemen in order to avoid credit repayment and to get quicker cash. Companies should reduce the period between the supply of FFB to the company's mill and effective payment to farmers. When the cost of total credit and re-imbursement modalities are fishy, complicated and not transparent, farmers will not be convinced about their total credit or the amount of credit left for them to pay and would be tempted to sell their bunches to middlemen.

5.6 CONCLUSION

FELDA was successful in the selection of settlers from landless people or people with land of non- economic scale. The choice and diversification of crops also helped to stabilize the income levels of settlers, as priority was given for perennial crops with the diversification

from one crop to the other on newer schemes depending on the market situation. Scheme development was given strong attention by FELDA in order to ascertain that quality planting materials were made available to the scheme, together with flexibility in management style to ensure a better output. Total credit amount and interest levels together with reimbursement modalities were not so harsh for the settlers as an adequate time of 15 years was given to the farmers in order to complete the repayment of the initial loan. The diversification of FELDA in downstream companies gave an added value to the main product. The 1960 Land Settlement Act prevented settlers from selling/dividing their plots and from selling their house and it forbids the sale of FFB outside FELDA mills. The block system of plot management prevented to a large extent the sale of FFB out of FELDA mills. That notwithstanding recalcitrant settlers or their heirs continue to sell FFB from their plots outside FELDA mill, especially in second generation plantings. Oversight of FELDA activities vis-à-vis settlers is provided by a special Department from the Prime Minister's office called *Seranta*. The price of FFB is regulated by MPOB, taking into account the international market price for CPO, the variety of planting material, the age of the palms and the extraction efficiency of the industrial mill. Settlers are able to make a living from the sale of FFB from their plots, dividends from their shares at FELDA investment cooperative, as well as entrepreneurial activities.

On the other hand, the FELDA scheme faced several challenges, such as delays in the installation of settlers, a large bureaucratic machinery that follows a hierarchical system of management with delays on important decisions, the dependency of settlers to FELDA even after the completion of their credit and the attribution of their land certificate. More, schemes were developed without taking into consideration the environmental component of sustainable agricultural development. FELDA is also accused of ethnic bias, as priority was given for the Malay ethnic group although the uniformity in ethnic origin has certainly played an important role on social cohesion in scheme villages. The development cost per settler for housing, food crop and oil palm holdings was quite high although largely subsidized by FELDA. Labor shortages have also been noticed for second-generation plantings due to the ageing of settlers population and the fact that their sons and daughters are not interested in working in remote plantations. Fragmentation of plots by individual planters also poses a serious problem to FELDA-Technoplant which manages second-generation plantings.

PIR Trans-local also recorded successes in the selection of scheme beneficiaries as priority was given for the landless poor and the scheme was also largely subsidized by the Indonesian government. The village cooperatives played important role in negotiations with company

officials for better FFB buying price, transportation of FFB to the mill as well as for the purchase and distribution fertilizers to farmers. But the multitude in cooperative could also be a favorable ground for manipulation by company officials. Land certificate is handed to the farmer after the completion of loan repayment. The advantage of plot ownership could also trigger rampant plot sale.

The challenges faced by the PIR scheme include; intra and inter population conflicts, over-centralization in scheme management with a top-bottom approach in decision making, the negotiation of FFB buying price negotiated between the company and the village cooperatives and the early sale of plots.

Under KKPA, the monthly price control committee for FFB at the provincial level ensures that smallholders are not cheated upon by the company. Priority is given for the local population with access to land to join the scheme, thus helping to reduce intra-inter population conflicts. But the limitation here is that only land owners can have access to the scheme meaning that marginalized groups such as the unemployed youths and women cannot register. The Cooperative as an institution is very important in the success of the scheme, since it is the intermediary body that deals with both the company and farmers. The district government plays a regulatory role and does not directly fund the scheme. The decentralization of powers to the District government has brought development closer to the population and gives opportunity for District officials to stimulate, develop and provide oversight to these schemes, though to an extent some District governments are still lacking in material, financial and human resources. Cases of collusion between District officials, elites and company management at the detriment of the farmers have been reported. Plot sales and the side selling of FFB destined for company mills to middlemen have been noted for poorly managed schemes.

The various partnership schemes decided by Governments are all quite a laudable initiative to fight poverty for the rural masses especially through the involvement of agro-industries/institutions with much experience in the oil palm sector. For such initiatives to succeed, there is need for a strong political will from the Governments, companies, cooperatives and other stakeholders which must be able to work hand in hand, in a transparent and corruption free manner in order to make sure that contracts and agreements are duly respected. There is also a need for transparent/corruption-free measures to be enforced at the level of the company's activities with the cooperative and vice-versa and at the level of the

cooperative activities with the farmers and vice-versa. Monitoring and evaluation committees must be set up by Governments which should also include civil society organizations, conservation and social NGOs and other stakeholders. Such committees will be in charge of constantly overseeing the activities of the company and the farmers, in order to avoid future problems between both parties.

6 CHAPTER SIX

TOWARDS A WIN-WIN PARTNERSHIP BETWEEN AGRO-INDUSTRIES AND OIL PALM SMALLHOLDERS IN CAMEROON

6.1 ABSTRACT

This chapter focuses on the conditions to put in place in order to foster win-win and sustainable partnerships between agro-industries and oil palm smallholders in Cameroon. It benefits from knowledge gathered from the shortcomings of the FONADER partnership, case studies of the SE Asian models, other models reviewed from literature like the Allianz partnership in Columbia. It also builds on the participatory prospective analysis workshops on the future of partnerships in Cameroon′s oil palm industry held during the SPOP project. Major items listed include: reasons why the government should support such partnerships, reasons why agro-industries and oil palm smallholders should enter into partnerships, main and support institutions together with their obligations, the mechanism to put in place, contractual obligations, pitfalls to be avoided, as well as primary and secondary conditions needed for the success of such partnerships and their time frame. The chapter finally stresses the need for transparency, constant dialogue, corruption-free practices, and trust as necessary ingredients for the success of these partnerships.

Keywords: Partnership, Agro-industry, Smallholder, Contractual farming

6.2 **Why promote partnership between agro-industries and oil palm smallholders?**

The collapse of the FONADER sponsored scheme between agro-industries and oil palm smallholders in the 1990s led to the emergence of a strong independent palm oil producers' sector, generalized artisanal milling and an increasing theft level of FFB from agro-industrial plantations. The smallholders of today as compared to their counterparts during the FONADER scheme are faced with a plethora of problems: little access to credit from banks, little access to quality planting material, little access to inputs, little knowledge on best plantation management practices, and a very limited organization of the sector.

With the coming of new oil palm companies mostly from Southeast Asia, it is even feared that the agro-industrial development will further marginalizes smallholders and results in social crises, land tenure conflicts, increased forest conversion, habitat destruction for wild life and increased pollution from industrial mills. A sustainable model for oil palm development is yet to be put in place.

Though the government has been trying to organize and support smallholders through the smallholder department in the Ministry of Agriculture and Rural Development, working in collaboration with the Union of Palm Oil Producers (UNEXPALM), the sector is still poorly developed in terms of palm oil production basins covered, in numbers of smallholders

involved, and in the magnitude of the support offered. The absence of field extension workers is a major hindrance to the development of the projects.

It is within this backdrop that this research encourages partnerships between agro-industries and oil palm smallholders. Partnership, in a nut shell, will reduce pressure on the forest, it will reduce conflicts between agro-industrial companies with the local and indigenous population, it will also harness the relative advantages of both smallholder and agro-industrial production systems together. Thus, the putting in place of an equitable, reliable and sustainable model for oil palm development is of utmost importance.

The various sections of this chapter are the result of knowledge gathered from case studies of the pros and cons of the FONADER scheme, the Afriland First Bank sponsored scheme in Cameroon, the FELDA scheme of Malaysia, the PIR and KKPA scheme in Indonesia, and from other schemes reviewed from literature.

6.2.1 Why should oil palm smallholders enter partnerships with agro-industries?

One of the major problems facing oil palm smallholders has to do with the yield of their plantations. They record very low yields which stand at less than 1 t CPO/ha/yr. These low yields come from the fact that most smallholders do not have access to (or the means to buy) better quality planting material and fertilizer, do not have the technical and managerial capacity to manage their plantations. Since most agro-industries have the capacity to record better yields, it is believed that partnership between smallholders and agro-industries will be an opportunity for the transfer of knowledge and in-kind resources for the improvement of the yields of smallholder plantations.

Partnership between smallholders and agro-industries will also be an opportunity for smallholders to become eligible to loans from the banks. Most often, commercial banks are reluctant to give credits to smallholders, for fear that these credits will not be re-imbursed. Furthermore, smallholders do not have the necessary collaterals required for the banks to provide loans. Thus, partnership with agro-industries will be an opportunity for these smallholders to access loans from the banks. The agro-industries together with the help of government will also facilitate the processing of land certificates for smallholder plots. These land certificates will serve as collateral for the banks to provide credit to smallholders.

Artisanal mills cannot accommodate the production from smallholder plantations during peak season. The task of processing FFB in artisanal mills is time-consuming, extraction rates are low, and the resulting palm oil produced has often raised some concerns in terms of its

quality. Partnership will provide smallholders with the opportunity of a ready market for the sale of their FFB to the agro-industrial mill.

6.2.2 Why should agro-industries enter partnerships with smallholders?

Economic interest

Partnership between agro-industries and oil palm smallholders is seen as a way to increase the tonnage of FFB delivered to the industrial mill. Presently, during the low production season in Cameroon, most industrial mills are not fully operational or lie idle, since they rely only on FFB from their nucleus estate plantations.

Partnerships are also a way to outsource labour and to limit the risks related to production failure due to unfavorable climatic conditions, an epidemic outbreak and price fluctuations due to changes in domestic and international market price for CPO.

Partnerships are ways to reduce the development cost for agro-industries, if they were to carry out an extension of their plantations, where they will need to source for new land, recruit new workers, construct new camps as well as provide basic social amenities and social security at retirement for these workers.

Social benefits

Partnership between agro-industries and the local population is seen as part of their corporate social responsibility to the surrounding communities. Though all land in Cameroon belongs to the government, the local communities have customary rights to these land and could become a strong opposition to any development projects that does not sufficienly address their needs. The current theft of FFB from agro-industrial plantations is just a reminder of the fact that agro-industrial companies cannot do business while neglecting the local population living in the villages around their plantations. Partnership is therefore seen as a way to build social peace and cohesion with the local population, a way to fight against the theft of FFB, since the locals will become active stakeholders in plantation business. Partnership is also seen as a way for the agro-industries to provide support to their retired employees.

Environmental benefits

Partnership between agro-industries and oil palm smallholders will limit the rate of conversion of the natural forest for oil palm development. Studies have proven that smallholders do not go far into the forest to develop oil palm plantations, since they would not

have the income to construct new roads and build new bridges. To this effect, smallholders often use “degraded”, fallow land, or secondary forests for oil palm development. Agro-industries on the contrary have to go far into the natural forest to develop oil palm plantations in order to avoid conflicts about land and to reduce production costs. Partnership between the two is therefore seen as way to limit agro-industrial companies to sollicite permits from government to further encroach into the natural forests.

Partnership between agro-industries and oil palm smallholders also falls in line with the principles and criteria of RSPO which stipulate the development of oil palm smallholdings for the local and indigenous population by agro-industrial companies, as a way of overcoming some of the negative environmental and social impacts resulting from oil palm development.

6.2.3 Why should the government support such partnerships?

Poverty alleviation and stronger smallholder sector

The role of any government is to alleviate poverty for its citizens. After the collapse of the FONADER sponsored scheme, the economic crisis, the devaluation of the Franc CFA, and the structural adjustment programs, the government does no longer have the means to support oil palm smallholders. This is clearly seen in the absence of field extension workers from government agencies to provide the much needed technical advice. Since agro-industrial companies have the necessary technical and managerial capacity, together with resources for efficient plantation development, partnership with smallholders is seen as a way to transfer knowledge and resources to smallholders.

This is an opportunity for the government to work hand-in-hand with the agro-industries to establish land certificates for oil palm smallholders and use these land certificates as collaterals to solicite private banks to grant loans to smallholders.

This could be a way for the research institutions to provide quality planting materials on a credit basis through the agro-industries / smallholder cooperative to the smallholders. The provision of this quality planting materials would go a long way to regenerate the smallholder oil palm sector through the replanting of old palms and the replacement of native dura breed.

Economic interest

Partnership between agro-industries and oil palm smallholders is seen as a unique opportunity for the government to collect taxes through the delivery of FFB from smallholder plantations to agro-industrial mills. At present the government is losing money from FFB in smallholder plantations, since smallholders and agro-industries are working as independent bodies and no

efficient machinery has been put in place by the government to collect taxes from smallholder produce. Even when some taxation officials visit artisanal mills, it is rarely believed that the money collected really enters the government treasury.

Artisanal mills often have very low oil extraction rates, and the government has often decried the loss of oil, together with the low oil quality from artisanal mills. Partnership is seen as way of redressing some of these concerns.

The non-utilization of the kernel for the processing of palm kernel oil and the other by-products that come from the processing of FFB in artisanal mills are also a cause for concern. Partnership offers an opportunity for the utilization of the kernel and unused by-products like POME in methane gas capture plant.

Two thirds of the plantation surface area of Cameroon is in the hands of smallholders. By improving the yields of smallholdings, more CPO will be produced and this will limit the necessity to import CPO from Indonesia or Malaysia. Eventually it would result in domestic CPO self sufficiency and exportation atleast at the regional level.

Social/Environmental

Presently agro-industrial companies have compliant to the government to close down all artisanal mills especially those operating in the vicinity of agro-industrial plantations because of FFB theft. Partnership is seen as a way of reducing the theft from agro-industrial plantations and to enhance collaboration between the local population with the agro-industry. To limit the desire for already established agro-industries and those seeking new land to develop oil palm to further encroach onto the natural forest, at a time when oil palm development is raising a lot of concerns in the environmental and social milieus. At present, artisanal mills are not able to efficiently manage and dispose off the waste that results from the processing of FFB. Through partnership, by-products generated from the processing of FFB can be adequately managed and disposed off, especially with the installation of a methane gas capture plant in industrial mills.

6.2.4 How should social and conservation NGOs support partnerships between agro-industries and oil palm smallholders?

- To NGOs, partnership is seen as a way to redress some of the negative impacts that arise from land conflicts between the local population and the agro-industry, a way of

alleviating poverty for the rural masses and a way of preventing these agro-industries to further extend their plantations into the natural forest.

- NGOs are needed to build capacity for both plantation managers and smallholder cooperatives on the elaboration of a social-evironmental impact assessment, free prior and informed consent, the delimitation of high conservation value forest, best plantation management practices, etc.

6.3The philosophy of a win-win partnership: How should it be organised?

6.3.1 Institutional organization and responsibilities

❖ Main institutions

- Government

  The government should be a facilitator and regulator of the partnership under favourable conditions. This should be seen in the modalities for the selection of scheme participants, in facilitating access to land/land titles for both agro-industry and local beneficiaries of the project, in the selection of private banks to provide the credit at affordable interest rates, scheme development cost, contract elaboration, subsidizing the cost of inputs either by reducing taxation on imported inputs or by avoiding that a single firm monopolizes the importation of inputs, the maintenance of major roads for easy evacuation of products to big market.

- Agro-industry

  The agro-industry should create a department in charge of smallholders and this entity should be separated from estate management. It should have its own budget, personnel, transportation logistics and "heavy" equipments if possible. The agro-industry through its smallholder department should prepare the land, plant and manage the plantation for the smallholders until total credit has been re-imbursed. Provide managerial and technical capacity building for best plantation management practices to smallholders. Assist the smallholder cooperative with the help of government to facilitate the elaboration of a land certificate for the smallholders. Create a ready market for fresh fruit bunches coming from smallholder plantations. The pricing of these FFB should consider not only the CPO but also other products like the PKO and by-products like EFB, fibre, shell, kernel cake and POME, etc.

- Oil palm smallholders

  The smallholders should group themselves in cooperatives and elect members into key positions of responsibilities. This will help to ease the working relation between smallholders and the agro-industries. The cooperative works hand-in-hand with the agro-industrial unit incharge of smallholders and assumes total control of *plasma* management until total credit reimbursement, with technical assistance from the agro-industry. All the bunches from the *plasma* plantations are supplied to the agro-industrial mill. Payments for smallholder FFB should be endorsed by the cooperative management and the smallholder department of the agro-industry.

- Banks

  Facilitate access to credit for smallholders through agro-industry/smallholder cooperative. Collect land certificate for smallholders plot as collateral until total credit has been repaid. Use agro-industry/smallholder cooperative as "security" in case smallholders don't repay their credit.

❖ Support institutions

- Research institutions

  Produce and make available quality/certified planting material to agro-industries and smallholder cooperative. Make available data on ways to combat major pests and diseases in oil palm plantation. Recommend fertilizer types and rates depending on the age of oil palm and agro-ecological conditions for optimal production. Recommend best management practices in oil palm plantations with little threat to the environment.
- Companies that sell inputs

  Make available and on time, fertilizers, herbicides and pesticides at affordable prices, together with equipments used for their application.
- Independent transporters

  This includes transporters for FFB, CPO and related products.
- Wholesalers and retailers of CPO and related products

  This includes those who buy and sell CPO and related products to downstream or second transformation industries, as well as consumers.
- Downstream companies

These include companies that make use of CPO, PKO for the production of refined palm oil, soap, and other related products.

- Local council
  Contribute to the maintenance of major roads and bridges.
  Aid in the collection of taxes.
- Social and environmental NGOs
  Assist in the implementation of social and environmental impact assessment (SEIA) of new plantations for both agro-industry and oil palm smallholders. Assist in the elaboration of free prior and informed consent (FPIC) between agro-industry and local population in areas where oil palm plantations are supposed to be developed. Reinforce the capacity of both the company management and smallholder cooperative/smallholders on sustainable environmental practices. Assist in the elaboration, monitoring and evaluation of field implementation of the contract binding agro-industry and smallholder cooperative.

6.3.2 Contractual arrangement

A legalized contract is needed that stipulates the individual and joint responsibilities of each stakeholder in the partnership. The development of this contract should involve all the stakeholders with the use of an independent consulting firm.

6.3.3 Mechanism of the scheme

The mechanism of the scheme should be such that the scheme development committee comes up with a budget for the development and maintenance of the scheme during its immature period. This budget should be endorsed by the government, following the free market condition of the period, with some degree of flexibility in case of any eventuality. This money should be borrowed by the cooperative, but the money should not enter the cooperative account. It goes directly into the account of the company.

The company should work hand-in-hand with cooperative management to facilitate the establishment of land certificates for beneficiaries of the scheme, with the help of the competent government departments. When these land certificates are established, they should be handed to the bank that granted the loan, to serve as collateral, until the credit has been

repaid. The company on its part is supposed to set aside some funds to complement the timely re-payment of the credit.

A= Credit for development and maintenance of oil palm plantation during immature period.

B= Interest rate.

Total credit = A+B/100(A)

Given that the duration of repayment as stipulated by the bank is after 4 years when palms must have started producing, with a 6 years repayment schedule. This implies repayment per year= (A+B/100(A)) × % based on age of palm, while monthly repayment of credit = ((A+B/100(A)) × % based on age of palm) × (% based on the month of the year).

In deductions from income of FFB supplied from smallholder plantations, priority should be given first for the re-imbursement of the credit, secondly the estimated field operational cost for that month, thirdly should be money to pay cooperative management together with any deductions that has to do with the cooperative operational cost and lastly the left over is handed to the farmer.

The company uses its technical know-how to develop plasma plantations for smallholders with quality planting materials purchased from research institutions. The company manages this plantation during the immature period before the palms starts producing. When the palms start producing, the company continues to manage smallholder plantations and relinquishes powers progressively to the cooperative through capacity building of cooperative management. When the credit has been completely re-imbursed, the management of plasma plantations is handed over to the cooperative, but the company will still be there to provide technical supervision on the activities of the cooperative.

6.3.4 Pitfalls to be avoided

- For the block system of plasma management, it is not advisable for farmers to know the location of their plots. They can go ahead to sell the plots to third parties even before they start reaping the benefits from their palms. The share system of scheme management can be implemented where farmers are not attributed individual plots until the total credit has been repaid. They get dividends based on the plot area surrendered for the scheme and get paid on field operations performed. Farmers can be

attributed plots when their credits are completely re-imbursed. At this stage the production from the palms would have been very encouraging and farmers will no longer be tempted to sell their plots.

- In order for the scheme to succeed, the cooperative should be managed as an independent entity devoid of collusion with the officials of the smallholder department in the company. Constant dialogue between company and cooperative management and between cooperative management and the farmers is needed in a transparent and corruption free environment.
- The sale of FFB to artisanal mills and to smallholders who have completed the repayment of their credit can be avoided through favourable pricing of FFB plus the attribution of bonuses and premium for quantity and quality of FFB by the committee responsible for this pricing on a monthly basis. The prompt payment of farmers, the maintenace of plantation roads and the provision of logistics for the timely evacuation of FFB immediately after harvest in order to prevent weight loss.

6.4 Primary conditions needed for the success of a win-win partnership

❖ The need for a strong political will by the government to regulate the sector.

- Ensure SEIA and FPIC processes are a prerequisite to any industrial oil palm development projects in the country.
- Access to land for agro-industries on the condition that part of their concession will be used to develop plasma plantations for smallholders.
- Selection of the categories of persons to benefit from the scheme. Here special attention must be given to favor the un-employed youths and single women, with no access to customary land. The socio-economic conditions of the beneficiaries should also be taken into consideration with priority given for the locals who lay customary claim to the concession given to the company and most especially the poorer classes in the society, but the project should not be restricted only to the poor.
- Access to credit for the functioning of the partnership. Here we advise that government should select preferably private banks to provide the credit for the scheme at favorable interest rates. Modalities must also be put in place to make sure that when banks disburse the credit, these credits will be paid at the appropriate time. For instance land certificates from smallholder plots could be handed to the bank as

collateral, while agro-industry and smallholder cooperative will stand as security for the repayment of the credit.

- The cost to develop plasma plantations for smallholders by agro-industries must be monitored and endorsed by the government and should fall within the free market rates.
- The cost of inputs should be subsidized by the government. At present the importation of inputs is monopolized by a few individuals. If other firms come into the business, there will be competition and the price of inputs will definitely fall. Other ways will be for the government to exempt these companies from certain taxes, and then come in and regulate the prices of these inputs on the domestic market.
- Government should engage competent actors in the mediation of the contract binding the oil palm smallholders and the agro-industry. Independent consultants could be solicited to develop a contract binding the two parties to make sure that the clauses of this contract do not disfavor oil palm smallholders, since they stand at the weaker side if they were to bargain directly with the agro-industry. All stakeholders should be fully represented in all meetings geared towards the elaboration of the contract. After the elaboration of the contract, this contract should be legalized by competent authorities.
- The government is also supposed to be represented by competent ministerial departments in each of the committees that will be set-up to monitor and evaluate the progress of the scheme.
- The need for government to liberalize the price of CPO produced by the agro-industry. At present the price of CPO produced by agro-industry is not free, but fixed at 450 FCFA/kg. But this is not the case with the price of red palm oil produced by oil palm smallholders, since their price follows the fluctuation of the demand and supply of the product in the domestic market. This will imply that during the low production season for oil palm, there will be scarcity of palm oil and as such the price of the product will increase, and this will benefit smallholders, since it will give them more income.

❖ The need for transparency at all levels of the partnership: At the level of the cooperative dealings with the agro-industry and at the level of the cooperative dealings with the farmers. This transparency will build trust and confidence amongst all stakeholders involved in the partnership.

- Selection of participants to be part of the scheme

  Priority should be given to the native/local population. This is because in Cameroon just like in some other countries, the native/local populations have customary rights to land, though in principle all land belongs to the State. This implies that for any development project to succeed there is need for the involvement of the native/local population through free prior and informed consent (FPIC). The FONADER scheme succeeded in involving only native/local population who had user-rights to land located within 30 km radius from the company's mill. But this clause in the FONADER contract did not exclude migrants who had left other parts of the country, bought land from the natives and settled in the area. In situations like this, it was possible to see natives that were not part of the project, not only because they were not interested, but also because they had sold their lands to migrants and elites and did not have land that fell within the location of the project. The question that arises is what can be done to make sure that natives who do not have land within the location of the project, effectively be part of the project? The government can decide to divide a percentage of the total concession given to the company for the development of plasma plantations for such natives. Another question to answer is whether it is the fault of those natives who were able to preserve their land and did not sell to others? If the objective of the government is to fight poverty, then there is an absolute need to involve the native population without access to land. This is one area where the FELDA scheme in Malaysia succeeded because it involved people living below the poverty line and without access to land or people who owned land which was not up to an economic scale. In Cameroon, due to cultural reasons, women (single women and widows) and youths don't easily have access to land. Apart from male household heads that should be part of the scheme, modalities should be made such that other categories of persons like women and unemployed youths are also part of the project.

  -The socio-economic conditions of selected participants:

  Priority should be given to persons living below the poverty line and who are involved in subsistence agriculture as their main source of livelihood. This is to say that households with multiple sources of income like the elites should be limited in the scheme. Let's say 70% of the project should target the poor and 30% for the elites. This is one of the problems faced by the FONADER and Afriland sponsored scheme, because elites were able to grab a major proportion of benefits that were destined for poor farmers. A baseline survey is needed to ascertain the beneficiaries of the scheme.

-Age group of those selected to be part of the scheme:

The active age group of between 25 to 45 years should be given priority to be part of the scheme. This category of persons would still be energetic enough to provide the labour for the scheme. The contract should make it clear that the participants must be able to provide the labour force for the scheme. Labour remains one of the major problems faced by smallholder plantations in the country, with a majority of the labour force coming from outside the oil palm production basins. As such for the scheme to succeed, the contract should carry allowance either for family labour, company labour, or hired labour. Family and hired labour are more appropriate for smallholder plantations that are scattered in space, while company labour is more appropriate for smallholder plantations that are clumped in one block.

- A committee to elaborate and legalize the contract binding agro-industries and smallholders

  This committee is necessary to ensure that the contract does not weigh more on the local people who will eventually become the smallholders/outgrowers. This committee should comprise a representative of the native population, the agro-industry, competent government services, social and environmental NGO's, the Bank, as well as an independent consulting firm as facilitator, etc. During the FONADER partnership scheme, the contract binding the smallholders and the agro-industry was unilaterally negotiated without the involvement of the smallholders, and besides these smallholders were operating on individual basis with the agro-industry and were not grouped into cooperative.

- Scheme development and management process

  The Company should be responsible to develop the *plasma* plantation for the smallholders. In a situation where the *nucleus* estate and the *plasma* plantation are located in one big block, then the two should be developed simultaneously without any demarcation. The smallholder cooperative will benefit from the expertise provided by company management, the provision of quality planting material, and regular fertilization of the plots. The cooperative could always be hired by the company to execute some of the field operations during the establishment stage and to settle land disputes that may arise within this period. The need to carry out intercropping during the early stage of the plantation for livelihood reasons should be acknowledged, but care should be taken on the choice of the crops, the temporal and spatial design as not to reduce the yield of oil palm when it starts producing. This intercropping will

provide farmers with food and income during the immature stage of the plantation. Research should focus on intercropping at the production stage of the oil palm. When the palms must have entered into production or the repayment of the credit completed, the *plasma* plantation is then handed for the cooperative to manage with the technical assistance of the company.

- The credit establishment and re-imbursement committee

  This committee is supposed to get the cost to develop a hectare of oil palm plantation. This cost is supposed to be what obtains in the "free market". This will help the smallholders not to be cheated by the agro-industry. Once the development cost of the plantation is known, the next step will be to get the cost of field maintenance of the plantation during the immature period. These two costs should be endorsed by the government, added together, the interest rate fixed and the duration of total credit repayment stipulated. Based on the production that is coming from the smallholders plot, a certain percentage will be deducted first for the repayment of the credit, and secondly for the payment of field maintenance cost at the mature stage of the palms. This is done by calculating the expected field maintenance cost for that year and dividing by 12 months to know what is supposed to be paid each month. Since the production of FFB is divided into the peak season and the off-season, there is need to distribute this cost and the credit that is supposed to be repaid based on the fluctuation of monthly production per year and as the production increases as the palms increase in age. The duty of the committee is to make sure that the re-imbursement of the credit is carried out in a transparent manner and that cooperative officials do not connive with company officials to work at the detriment of the smallholders.
- A monitoring and evaluation committee. This committee is charged with the duty to supervise the activities of the agro-industrial unit in charge of smallholders and the smallholder's cooperative. This committee should be composed of relevant stakeholders as mentioned above. This committee is supposed to monitor the evolution of the partnership by seeing that the clauses written in the contract binding both parties are duly respected when it comes to the field implementation of different operations. The committee can decide to hold its meeting either quarterly or bi-annually to follow-up whether the field operations are effected as recommended on the contract. This type of committee did not exist during the FONADER partnership scheme.
- The need for independent auditors to constantly evaluate the accounts of the cooperative and the smallholder department of the company

These are independent bodies that may not be part of the committee and their duty is to regularly pop-in to evaluate the account of the cooperative and the smallholder department of the agro-industry. Their reports will also give more credibility to the functioning of the partnership.

- FFB price control committee

  There is a need for a committee to constantly regulate the price of FFB from smallholder plantations taking into cognizance the price of CPO in the international and domestic market, the variety of the palms, the age of the palms, the processing cost of FFB in the mill. Since palm oil produced in Cameroon is currently sold mostly in the domestic market, it is important to prospect the fluctuation of the wholesale price for palm oil over the months of the year as a way of negotiating the price of FFB sold by the cooperative to the agro-industry. When smallholders are able to get a better price for their FFB supplied to the mill, they will not be tempted to process FFB in artisanal mills.

- Managerial and technical capacity building from agro-industries and other relevant institutions to the cooperatives and subsequently to the farmers

  There is a need for cooperative officials to build capacity in the area of finance management, record management, farm management, institutional management, for its smooth functioning. Since the agro-industry and other competent institutions have the needed expertise, they would be charged to transfer this knowledge to cooperative officials, which will later be transmitted to the smallholders through regular meetings with cooperative officials.

- The need for agro-industries to create a department to work with smallholders

  The creation of a smallholder department at the level of the agro-industry to work with the smallholders or their cooperative is very important. At present the smallholder departments in these agro-industries are merged with estate management in order to reduce costs. But we think that a win-win partnership between smallholders and agro-industry will imply that the smallholder department has its own budget, personnel, logistics (office, trucks, etc.) and should be headed by a smallholder manager or atleast a field assistant at the level of each estate. This will enable the department to

work effectively with either the smallholders as individuals or grouped in the form of a cooperative.

- The setting up of a viable cooperative

  The cooperative is a necessary tool to foster a win-win partnership between oil palm smallholders and agro-industries, provided the cooperative management can work independently from the agro-industry and is having the interest of its farmers at heart. The members of the cooperative management should be elected for a given duration, and could be re-elected depending on whether they are performant or not. The cooperative should be composed of the president, the secretary general, treasurer and underneath these categories of persons; we have the group-heads. When compared to the other categories of cooperative management concerned with administration and finance, group heads are the field assistance of the cooperative and form the liaison between cooperative management and the smallholders. Cooperative management should be corrupt free and should be transparent in its dealings with the smallholders and the agro-industry. This will help to build thrust and confidence in the management of the cooperative. The cooperative is supposed to work hand in hand with the company to draft a calendar for the different work programs that are supposed to be executed for the entire year and the months within the year. The company could decide to manage the plasma plantation and hand it to the cooperative when the palms have entered into production, or when the total credit owed to the Bank has been repaid. When the management of the plasma plantation is under the tutelage of the company, cooperative management will have to learn from company management on proper plantation up-keep, as well as administrative and financial management. Even after the eventual handing over of the plasma plantation to cooperative management, the company is still supposed to be there to help provide managerial and technical capacity building when needed. The cooperative also needs to diversify its business ventures in order to generate more income for the smallholders.

- The need for the cooperative to own shares in the agro-industrial mill

  The owning of shares by the smallholder/cooperative in the mill makes them benefit from yearly dividends from the profit made by the mill and this is enough incentive to strengthen the partnership between the two institutions. The difference here will be that unlike in the alliance scheme in Colombia where farmers get dividend/bonuses in the profit made by company's mill based on their plantation surface area, here the

dividend should be based on the total FFB coming out from smallholder holdings. Meaning the more tonnage/ha/age of oil palm smallholders' supply to the industrial mill, the more dividends they get.

- The yield of smallholder plantation

  Soil and foliar analysis, fertilization based on standard practices, IPM, etc. When palms are still immature, fertilization should follow standard practices recommended for such agro-ecological zones. As soon as palms have attained maturity and are about 8 years old, fertilizer recommendation should follow the results from soil and foliar analysis. Apart from adequate fertilization, integrated pest management practices should also be carried out to fight against pests and diseases affecting oil palm.

- Rehabilitation of agro-industrial mills

  The industrial mills from existing agro-industries are quite old. They experience frequent breakdowns. When this happens it is very common to find heaps of FFB getting rotten in the mill yard. For a win-win partnership to be sustainable there is need for the installation of modern mills with larger capacity and better extraction rates.

- Regular road maintenance

  When oil palm smallholders through their cooperative supply their FFB to the company's mill, a certain amount of money should be deducted depending on the kilogram of FFB supplied to the mill and kept on the cooperative account. This money will eventually be used for road maintenance. And since most companies either have heavy equipment or hire them from road construction companies, this could definitely be used to maintain the roads leading to smallholder plantations.

- Concerning labour

  The selected participants and their households should be able to provide the labour for their plantation, and if they think that they will not be disposed, they should be able to hire somebody to work on their behalf. The contract that is signed between the smallholders/cooperative and the company should make it clear that the selected participants of the project should be able to provide the labour force for the project. The issue of labour force for the agricultural sector and the oil palm sector in particular is quite serious in the country. The labour in most oil palm plantations comes from outside the production basins, from the Northwest and Northern regions of the country. Natives complain that work in oil palm plantations is very strenuous

and with little pay and at times they don't want to wait until the end of the month to be paid. Most energetic youths will prefer to indulge in other income generating activities or move to towns and cities to seek for semi-skilled jobs.

6.5 Secondary conditions needed for the success of a win-win partnership

- Land selection for oil palm development

  The need to carry out free prior and informed consent (FPIC), environmental and social impact assessment (ESIA), priority should be given for the utilization of secondary forest, food crop land, former plantation land with the protection of high conservation value forest (HCVF), peat zones, and primary forest. Research should be focused on the utilization of drought tolerant varieties in savannah areas. Portions of land on which local communities have user-rights should be used to develop oil palm plantations for smallholders.

- The surface area per smallholder for the formation of a cooperative

  This is especially necessary for already established agro-industries which have to work in partnership with their peripheral smallholders. Smallholders should have holdings of economic size. Smallholders in Cameroon are diverse in terms of surface areas and are categorized into: smallholders (<10 ha holding); medium holders (10-20 ha holding); and large holders (>20 ha holding). The first two categories of smallholders should be grouped into cooperatives, while the last category could operate as single farmers with the agro-industry.

- What should be done for smallholder plantations not located in the vicinity of these agro-industries?

  The government should make sure these smallholders are supplied with quality planting materials and inputs at subsidized rates. Depending on the total surface areas of these smallholdings, they could be grouped into cooperatives and install a mill with a bigger capacity and better extraction rate. This cooperative should be run by the smallholders themselves. They can come into an agreement with other downstream industries either in the country or abroad to ensure a ready market for their CPO. This is exactly what is currently happening in Sombo, Nyong et Kelle division. The smallholders in the area have grouped themselves in the form of a cooperative, and through the help of the Ministry of Mines, they have obtained funds of about 250

million and are almost completing the construction of a 2 ton FFB/hr industrial mill that will have an improved oil extraction rate of 20%. The farmers have also planned to open up a soap factory, a poultry farm, a piggery farm, so as to make use of the main products and by-products of oil palm respectively. Similar projects are supposed to be realized in three other divisions of the country.

- Attribution of ownership to oil palm plots when the credit has already been repaid. Land ownership begins with the attribution of plots to selected individuals under the block system of plasma management. When people are able to identify their plots under the block system, they may be tempted to sell to others if they are faced with some financial crises and may not be able to enjoy the income from their plots when the palms start to produce. In order to prevent such incidence, the identity of plots could be undisclosed to the selected individuals and they are made to work in groups under the control of block/group heads elected by the farmers. Here the income coming from their block would be shared equally amongst the smallholders and when they have completed the repayment of their credit, the plots could then be shared to the smallholders. If the objective of the project is to ensure that the smallholders continue to grow oil palm and partner with the company, then the land certificate that has been established for each plot should not be made available to the smallholders otherwise, they will still be tempted to sell the land especially after the demise of the original smallholders who started the project. But from experience we have gathered with oil palm smallholders in Cameroon, when compared to their Indonesian and Malaysian counterparts, they already know the value of cultivating oil palm and may not want to sell their plots to outsiders when the palms are still immature. What may cause them to sell their plots is when they have doubts about the total credit as well as the repayment modalities. The sale of plots to outsiders should be totally discouraged and this should be clearly stated in the contract. For smallholders who own individual plots that are scattered in space from one smallholder to the other, but fall within the zone of intervention of the project, the land certificate that is made for their plots should not be handed to them, until after the repayment of their credit or after a complete cycle of oil palm cultivation.

- Representation of cooperative in company board of directors meetings

  When smallholders through their cooperative are represented in the board of directors of the company, it becomes easier for the cooperative to table important issues for the wellbeing of the smallholders during company board meeting.

- Assets and income sources

  With regards to assets, the smallholder's holdings will definitely be one of their assets, since each holding will have a land certificate. Income sources for the smallholders could be varied. This could range from the sale of FFB to the company's mill, the owning of shares which permits them to benefit from yearly dividends, wages for work done on the plantation, premium and bonuses for bunch quality and quantity respectively, etc.

- The avoidance of land conflicts

  The scheme should give priority to the native population to be part of the scheme. The allocation of land to non-natives should be discouraged because this can lead to land conflict between the native population and the non-native population and also between the native population and the agro-industry in later years. Instead similar models of agro-industrial-smallholder partnership should be implemented in other agro-ecological zones adapted to different crops.

- Deduction to compensate cooperative management

  The deduction from FFB supplied to the mill is also necessary to compensate cooperative management either on a monthly or yearly basis.

- FFB theft control for both agro-industrial and smallholder plantation

  When local communities feel involved in company activities, it becomes easier to track down on FFB theft. This is mainly because the thieves are not strangers but people who are living in the same community. The theft of FFB can also be mitigated when the transportation of FFB is effected immediately after harvesting as opposed to when FFB are left to stay overnight at farm gate, before evacuation the following day. Another way to prevent the theft of fresh fruit bunches will be to effect court action on defaulters.

- The transition from scheme to independent smallholders

  This often happens after the farmers must have had an improved income level and have other sources of income and also think that they have the necessary knowledge to manage their plantation without "inputs" from the agro-industry.

- ❖ RSPO training for smallholders through their cooperative

  Such training will help smallholders be abreast with best plantation management practices and other RSPO principles and criteria, as a way to produce certified sustainable palm oil. As such agro-industries which have already carried out such training will help to disseminate this knowledge to the smallholders through their cooperative. The production of certified palm oil will open new doors for market and funding opportunities.

- ❖ Replanting savings

  This deduction is necessary to cover the replanting cost for the next cycle of oil palm plantings.

- ❖ Development of downstream industries: (Food sector, bio-energy sector, cosmetics sector), this will add more value to the main products (palm oil and kernel oil) and generate more income and employment.
- ❖ The utilization of oil palm by-products: (EFB, fibre, kernel, kernel chaff, POME, etc). For example the development of a methane gas capture plant, to reduce the amount of green house gas emitted to the environment, the production of energy to run the mill, the estate, and surrounding villages.

6.6 The planning of operation

- Company will definitely need operational licences from the government.
- An environmental and social impact assessment is needed for the success of the project.
- Socialization with the local and indigenous communities who lay customary claims to land.
- Selection of scheme beneficiaries.
- Election of cooperative management from selected beneficiaries.
- Development of a legal contract to bind the selected beneficiaries and the agro-industry by an independent consultancy firm, involving both stakeholders.
- Summation of scheme development and maintenance cost at immaturity by scheme development committee.

- Endorsement of scheme development and maintenance cost at immaturity plus interest rate by the government.
- Collection of loan by cooperative and putting on the company's account.
- Scheme development and maintenance during immaturity by company.
- Commencement of loan repayment as soon as palms start producing after 4 years. This repayment is done for 6 years (ie until the 10^{th} year).
- Partitioning of plots to scheme beneficiaries in the presence of relevant government departments.
- Handing over of plasma management to cooperative after total credit repayment is completed. But then company will have to provide technical advice to cooperative management.

6.7 CONCLUSION

Agro-industries have competent management, advanced technology in the field of plant pathology, oil palm agronomy, pest and disease management, easy access to quality planting material either through in situ plant breeding research units or through the purchase from external sources, access to loans from national and international banks, better yields, larger milling capacities and higher extraction rates, together with better marketing policies. Where these agro-industries register some shortcomings is that their plantations are most often developed on the natural forest, they also register land conflicts with the local/native population who complain of land expropriation without any meaningful compensation. These conflicts are often translated into the prevention of these companies to carry out further expansion of their plantation on their land bank, or sollicit for land outside their land bank to develop oil palm plantations, as well as the theft of FFB by the local population in industrial plantations.

In Cameroon, the smallholder oil palm sector when compared to the agro-industry has a larger global surface area, but poses little threat to the natural forest, since the plantations are mostly developed on "already cleared" land or on secondary forests. These smallholder plantations have often been heralded by social and conservation NGOs as the most sustainable alternative to oil palm development. But these smallholders face a lot of difficulties to get quality planting materials, even when they buy inputs, they lack the knowledge on recommended doses to apply on the palm. Banks often refuse to provide them with loans since they donot

have enough collateral to guarantee the repayment of these loans. Even when smallholders mill their bunches in artisanal mills, the extraction rates are low and the capacity of these artisanal mills cannot accommodate the totality of their FFB during peak production season.

It is believed that a "win-win" partnership between the two stakeholders could be an opportunity to bring their strengths together and a way to reduce some of the adverse effects that usually accrue from oil palm development. But there is need for a strong political will on the part of the government to guarantee the success of this partnership scheme. This political will should be seen in the area of selection of land for scheme development, selection of scheme beneficiaries, selection of banks that will provide the loan with cheap interest, making available inputs at affordable prices, the establishment and legislation of a balanced and flexible contract for the stakeholders, as well as the putting in place of different committees (a committee to elaborate and legalize the contract, a credit establishment and re-imbursement committee, the price control committee for FFB from smallholder plantation, the montoring and evaluation committee, etc.) to ensure the efficient implementation of the contract on the field. There is a need to learn from the positive and negative experience of the FONADER partnership scheme in order to prevent such a mishap happening again. All these initiatives must be carried out in a transparent and corruption-free environment. Communication and regular dialogue is also needed amongst all stakeholders and this will help to build thrust and confidence.

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EXECUTIVE SUMMARY: CONDITIONS FOR THE SUSTAINABLE DEVELOPMENT OF THE SMALLHOLDER OIL PALM SECTOR IN CAMEROON

A crop cannot be held responsible for destroying the natural forest, grabbing local peoples' lands and exploiting poor workers. It is not the crop but the model of agricultural development chosen that can either mar or make the project a success. Agriculture is one of those activities that eats up enormous land, destroys the forest and pollutes water ways if sustainable measures are not put in place. In the past, very little was done to implement sustainable agricultural practices on the field, especially in the oil palm sector.

In the last decade, there has been a lot of intervention from conservation and civil society organizations trying to push governments to impose sustainability principles on the industry, and various actions on markets on the need for agriculture and oil palm development in particular to be done sustainably. Today science has proven that sustainable agriculture is the only possibility to guarantee the needs of today's generation without jeopardizing the needs of the future generation. This is a holistic approach that takes into account the social, environmental and economic perspectives in its development strategy.

Though oil palm originated in tropical countries of West and Central Africa, these countries are still to benefit from the full potential of the two main commodities, palm oil and kernel oil, let alone the by-products after processing. The pollinating insect (*Elæidobius kamerunicus*), the tenera breed known at the time as "Lisombe" palm were all discovered in tropical Africa, but paradoxically these countries are today net importers of palm oil from countries where oil palm is considered an exotic crop. Africa that led the scene in terms of production and export until the 1960s is today a net importer of palm oil.

The development plans of the oil palm sector in most African countries, immediately after independence in the 1960s, were successful in terms of surface areas developed both for agro-industries and for oil palm smallholders, in quality of planting material utilized, and in the level of technical upkeep of their plantations. This resulted in high yields, as was the case with the FONADER (National Fund for Rural Development) scheme in Cameroon. It is within the FONADER period that enormous successes were achieved in the smallholder oil palm sector in Cameroon. But there were also some lapses in the planning and execution of this development plan. The collapse of the FONADER scheme led to the collapse of the partnership binding oil palm smallholders and agro-industries. The smallholders of today are left to themselves and despite several government efforts to revamp the sector through the

smallholder department in the ministry of agriculture and rural development, in collaboration with some agencies, there is still much to be done. Not all oil palm production basins are covered, even in areas where these projects intervene, only a small percentage of the smallholders can be reached by these projects, when compared to the number of oil palm smallholders on the field.

Today independent oil palm smallholders are facing a lot of problems, like a difficult access to quality planting materials, inputs, credit from financial institutions, market. This inevitably translates into very poor yields of less than 1 t CPO/ha/year. On the contrary, smallholder in Indonesia and Malaysia involved in partnership with agro-industries are able to record 3.5 to 4 t CPO/ha/year and 40% of the palm oil produced in both countries comes from smallholders. The total surface area for Cameroonian smallholders is nearly two times bigger than for agro-industries, but they register only 1/3 of the total FFB production.

The two giants in the oil palm sector, Indonesia and Malaysia, have also put in place several development plans for the oil palm sector in their respective countries. The government of these countries did not only use oil palm to develop the agro-industrial sector, but they also used oil palm to develop smallholder plantations for the rural masses, in order to alleviate poverty. The governments of these two countries were quite flexible and innovative in their development plans for the oil palm sector. In Indonesia for example, the government used the PIR ('*Perkebunan Inti Rakyat*' or Nucleus Estate and Smallholder Plantations) scheme to develop oil palm smallholdings for transmigrant and local population. The KKPA ('*Koperasi Kredit Primer untuk Anggota*' or Primary Cooperative Credit for Members) scheme, to develop oil palm smallholdings for the local population and to ease social tension between the local population and the transmigrant population. In Malaysia, the government as far back as the mid-1950s used rubber and later oil palm to develop smallholdings for the settler populations who were beneficiaries of the FELDA (Federal Land Development Authority) scheme. Everything wasn't perfect in these schemes, far from that. But the two governments were quite flexible and innovative in their decisions. For example the Indonesian government initially subsidized the development of schemes, but once faced with the Asian economic crisis, the government resorted to play a regulatory role. While the Malaysian government put in place 5 year development plans for the FELDA scheme, and did all it could to make sure that the targets for each development phase were met. As a result, today these two countries alone produce about 87% of world's total palm oil.

Because of increased awareness and pressure from certification bodies like RSPO (Round Table for Sustainable Palm Oil), ISPO (Indonesian Sustainable Palm Oil), downstream companies and consumers of palm oil and related products, of the need to implement sustainable practices in the oil palm sector in these two countries, one can witness a reduction in the extension rate of these companies, since they are forced to comply with sustainability principles enforced either by national governments or international organizations.

Some of these companies try a move to Cameroon and some other tropical African countries to develop oil palm plantations due to increased global demand for crude palm oil. These companies are interested to develop oil palm plantations because of favorable climate, abundant land, cheap labour, local market, and weak governance. In Cameroon for example, since 2009, a total of about 1 million hectares of land was requested by agro-industries mostly from Southeast Asia to develop oil palm plantations. Even if the requested surface areas were far from being converted into oil palm plantations, this is clearly an "eye opener" concerning the oil palm sector in the country, that things shall not stay the same in the future. The question that arises is: which development model should be used for the oil palm sector in Cameroon? Cameroon has already experienced all three development models for the oil palm sector. These include developing oil palm through independent smallholdings, developing oil palm through agro-industrial plantations, and developing oil palm through partnerships between oil palm smallholders and agro-industries. While agro-industries are efficient in terms of better machinery, processing equipment, technical knowledge and management prerogatives, which translates into better yields and higher extraction efficiency, family farming is better in terms of job creation, poverty alleviation and social justice. But then a formula for a win-win, equitable and sustainable partnership between agro-industries and oil palm smallholders is yet to be developed.

Some of the problems facing oil palm smallholders in Cameroon include the following:

- The smallholder oil palm sector is facing serious production problems with very low yields, aging plantations, high costs of fertilizer & chitted seeds, lack of technical information related to the cultivation of the crop, absence of loaning institutions with cheap interest rates and intangible support from government, bad state of farm-to-market roads.
- The collapse of the FONADER development plan in 1990s for the oil palm sector brought a vacuum to the industry in terms of working relationship between

smallholders and agro-industries. And despite the designing of different projects by government after 1990 geared towards the empowerment of oil palm smallholders, little successes have been registered. The absence of a model to develop the oil palm sector despite the coming of some foreign oil palm companies. It is only in 2013 that the government put in place a committee to develop a national strategy document for the oil palm sector in Cameroon.

- The present social tension between the local population and the already established agro-industries and those yet to be established makes one to suppose that joint ventures between the smallholders and agro-industries could provide better working conditions for both parties, improve on the livelihood of the locals and help to ease social tension.
- The current awareness by local and international conservation organizations on the need to preserve the forest in order to reduce the impact of deforestation on biodiversity loss and global warming gives added advantage for the need to promote the development of the oil palm smallholder sector.
- Cameroon is also a net importer of crude palm oil, with amounts of 50,000 tons of CPO in 2011, and 80,000 tons in 2012, and about 100,000 tons in 2013. Although the smallholder sector occupies 2/3 of the plantation surface areas of 170,000 ha, it only produces 1/3 of total CPO.

The overall objective of this study is to undertake a retrospective look at the oil palm sector in general and the smallholder oil palm sector in particular, their partnerships with agro-industries, to see where improvements were recorded over the years and where there is a need for progress. The study also draws inspiration from the positive and negative lessons learnt from Southeast Asian partnership schemes, as a way to redress the Cameroonian oil palm landscape.

Meanwhile the specific objectives were divided into the following chapters:

Chapter 2: History of partnerships between agro-industries and oil palm smallholders in Cameroon, in order (i) to trace the changes in the oil palm industry in the country; (ii) to describe its various stakeholders and (iii) to analyze the different partnership schemes that were put in place by institutions over time in order to develop the oil palm sector in Cameroon and some of the challenges they faced. This chapter is

published in the International Journal on Oilseeds and Fats, Crops and Lipids-OCL, (Nkongho et al., 2015).

Chapter 3: Strengths and weaknesses of the smallholder oil palm sector in Cameroon. The study carries out an evaluation of the sector with special emphasis on its current strengths and weaknesses, and on ways to overcome/solve the problems. This chapter is published in the International Journal on Oilseeds and Fats, Crops and Lipids-OCL, Nkongho et al. (2014) and as a CIFOR working paper (Nkongho et al., 2014).

Chapter 4: Artisanal palm oil milling in Cameroon. This chapter seeks to assess the profitability of the processing and marketing of red palm oil; and specifically; to identify the different types of people involved in artisanal milling; the production efficiency of the various types of artisanal mills, the quality control measures put in place during processing of FFB; to assess the return to labor, milling charges and contribution to income for each type of palm oil processor; to identify processors involved in the sale of red palm oil in the domestic markets; describe the market chains - artisanal or informal (wholesalers and retailers); to describe fluctuations in the price of red palm oil in the local market over the years; to assess the problems hindering the smooth functioning of the sector. This chapter is published in African Journal of Agricultural Research- AJAR, (Nkongho et al., 2014).

Chapter 5: Win-win partnerships between agro-industries and oil palm smallholders: Lessons from Southeast Asian experiences. This chapter studies the pros and cons of various partnership schemes implemented in Southeast Asia over the years, notably the FELDA scheme in Malaysia and the PIR and KKPA schemes in Indonesia. The field work is backed by an extensive literature review about these partnership schemes and other partnership schemes and alliances that have been implemented in the oil palm sector. This chapter is in the course of being published (Nkongho et al., forthcoming).

Chapter 6: Perspectives: Towards a win-win partnership between agro-industries and oil palm smallholders in Cameroon. This chapter takes a closer look at modalities to be put in place for a win-win, equitable and sustainable partnership between agro-industries and oil palm smallholders. This chapter will be published as a CIFOR Policy brief, (Nkongho et al., forthcoming).

Cameroon:

In Cameroon, the study was carried out in four out of the seven oil palm production basins that have a long-standing relationship with the agro-industrial companies. These basins include Eseka, Dibombari, located in Nyong et Kelle and Mungo divisions respectively of the Center and Littoral regions, and Muyuka, Lobe located in Fako and Ndian divisions respectively of the Southwest region. The agro-industries in question include Pamol Plantations, Cameroon Development Corporation (CDC) and SOCAPALM. The objective of the research was to study the relationship existing in the past and at present between oil palm smallholders in four (Eseka, Dibombari, Muyuka and Lobe) of the seven palm oil production basins carved out during the FONADER oil palm development plan in 1978 to 1990 and the major agro-industries.

The first priority was to study the history of partnership between agro-industries and oil palm smallholders and the reasons for the collapse of this partnership. Secondly we decided to characterize smallholders into elites, company workers, non-native and native, based on criteria like social status, income levels, place of origin, source of livelihood, past and present work, etc. The educational levels, age group, as well as gender repartition of smallholders were also taken into consideration. The extent of encroachment of smallholder plantations into the primary forest and the yield and income from oil palm cultivation. Thirdly we investigated the reasons why smallholders practiced artisanal milling, the types of artisanal mills used, the extraction efficiency of these mills and the benefits derived from the processing and selling of red palm oil, instead of supplying FFB to agro-industrial mills. Lastly we also carried out a participatory prospective analysis workshop with different stakeholders involved in the oil palm sector to know their opinion on which development model they think was most appropriate and sustainable for the oil palm sector in Cameroon. All stakeholders were unanimous that partnership between smallholders and agro-industries was the best model for the sustainable development of the sector in Cameroon.

Malaysia and Indonesia:

The objective of studying the Malaysian FELDA and the Indonesian PIR and KKPA schemes was to learn from the positive and negative experience recorded in the management of these schemes in order to generate policy recommendations on the model of partnership scheme to stimulate between smallholders and agro-industries of the oil palm sector in Cameroon. Here

we decided to study partnership models that have boosted the palm oil sector in these two countries.

In Malaysia, the study was carried out in one of the FELDA schemes in Besout, in the State of Perak, district of Batang Padang and sub-district of Sungkai. In Indonesia, the study was carried out in Jambi and Riau provinces. The companies studied include PT. SAL and PT. Megasawindo (Jambi), located in Bungo District, Pelepat sub-district, and PT. Musim Mas (Riau), located in Palalawan district, Sorek sub-district. Company officials, scheme smallholders, independent smallholders, middlemen, as well as district level authorities were all sampled in the course of the study.

The FELDA scheme of Besout in Malaysia is one of the oldest schemes. It was developed in 1974. The scheme presently has estate plantings, settlers replanting managed by FELDA Technoplant and replantings managed by individual settlers. In relation to schemes in Indonesia, the first company/scheme studied, PT. SAL has no *nucleus* estate plantation and is not yet certified with RSPO and ISPO, amongst others. This implies the partnership between this company and the transmigrant farmers of PIR and KKPA scheme is such that they have to supply the totality of their FFB to the company's mill. PT. Megasawindo was at the time of the study not yet certified with RSPO and ISPO or any certification body. The scheme under operation here is the KKPA scheme between native farmers and Megasawindo. When compared to PT. SAL, Megasawindo also owns a *nuleus* estate plantation, in addition to the supply of FFB from *plasma* plantations. PT. Musim Mas Sorek is certified with both RSPO and ISPO amongst others. The certification with RSPO is not only limited at the level of the company but also extended to its KKPA scheme.

Data collection:

Data collection for the entire study was done through literature review on the internet and in libraries, the collection of secondary data in research institutions, universities, agro-industrial companies, government institutions, etc., the administration of semi-structured questionnaires to oil palm smallholders, company managers and supervisors, government officials, social and environmental NGO's, artisanal and industrial millers as well as palm oil wholesalers and retailers alike. Focus group discussions were also carried out involving smallholders, company managers, and officials of the public and private sectors, not forgetting civil society organizations. Field observations were also done in smallholders and agro-industrial plantation, as well as in their artisanal and industrial mills respectively.

The general research question for the study was as follows:

- Can a win-win, equitable and sustainable partnership between oil palm smallholders and agro-industries be used to address the current challenges facing smallholders and the Cameroonian oil palm sector in general?

Why a partnership between agro-industries and oil palm smallholders? The premises were that:

- Partnership between oil palm smallholders and agro-industries can lead to an increase in the utilization of "degraded" land and reduce pressure on the primary forest.
- Partnership between oil palm smallholders and agro-industries can lead to a reduction in social tension faced by the present and new oil palm companies, which hinders their expansion and establishment respectively.
- Partnership between oil palm smallholders and agro-industries can lead to direct empowerment of the local population, thus helping in reducing poverty.
- Partnership between oil palm smallholders and agro-industries can reduce the level of fruit theft currently experienced by the agro-industries.

2. History of partnership between agro-industry and oil palm smallholders in Cameroon

The research question in this chapter was: "How is the history of partnership in the oil palm sector like and what are some of the reasons attributed for the collapse of the FONADER contract linking oil palm smallholders to agro-industries?" The study highlights that before the independence and re-unification of the British and French Cameroon in 1961, very little was done to build partnerships between agro-industries and oil palm smallholders. While agro-industries like Pamol and CDC benefitted from the utilization of quality *tenera* hybrid seeds and better milling efficiency, oil palm smallholders on the other hand harvested the native dura variety either from wild oil palm groves or planted in their farmland mostly in agroforestry based systems. Smallholders also used traditional artisanal milling methods with much lower extraction rates and environmentally unfriendly conditions to produce red palm oil.

After independence and re-unification, as a means to boost oil palm production and fight poverty, the Government of Cameroon established SOCAPALM under a *Nucleus Estate* and Smallholder model and extended this model to CDC and Pamol under the FONADER development scheme. Although this project greatly improved livelihoods through the

provision of technical assistance, quality planting material and inputs like fertilizers, herbicides and pesticides at subsidized rates, the project lasted only for 12 years, from 1978 to 1990. The project also recorded numerous pitfalls and FONADER underwent bankruptcy. Leaders used their positions in administration and managed to divert benefits that were meant for the poor. Furthermore, the project targeted only wealthy locals who owned land and did not provide any opportunities for the marginalized class like unemployed youths and women. Besides, contracts linking smallholders and agro-industries were unilaterally negotiated without the involvement of the local population.

The project also proved inefficient in the area of monitoring and evaluation by independent bodies. There was no strong incentive from companies to make sure that smallholders did repay their credit since the loan came from a completely different institution. Smallholders complained about the absence of transparency on the total amount to be reimbursed as well as on the modalities of reimbursement etc,. After the collapse of the FONADER scheme and the implementation of the structural adjustment program, the Government did very little to develop the oil palm sector and to foster partnership between smallholders and agro-industries. The *Projet Villagisation* sponsored by Afriland First Bank, a pilot project of SOCAPALM Eseka with smallholders is not very different from the FONADER scheme, as it is marred with similar flares and shortcomings.

As opposed to other cash crops like cocoa, coffee, and rubber that rely much on the international market, palm oil benefits from an increasing domestic and sub-regional market. The oil palm areas cultivated by agro-industries has remained relatively stable over the years while areas exploited by smallholders have tremendously increased over a short period, although recording very poor yields. With the arrival of new oil palm plantation companies in Cameroon and the interest shown by already established companies to expand their cultivated areas, there will be significant changes (either positive or negative) in the oil palm landscape in the near future. The new companies just like their older counterparts will be requesting new areas to develop/expand their plantations. Public attention must be paid to the granting of these areas in order to avoid any additional forest conversion, habitat destruction for wild animals, social crises with indigenous and local populations and increased pollution to the environment. Also the domestic and sub-regional market that used to exist may drastically be saturated and as such there will be a need for new markets not only for agro-industries but also for smallholders.

Last but not least, there is a clear need for a political will and the promotion of transparent and innovative measures by government in order to strengthen partnership between agro-

industries and oil palm smallholders. The shortcomings of the FONADER and Afriland First Bank sponsored schemes call for future partnership schemes in the oil palm sector to be flexible, mutually beneficial and sustainable. All these measures will greatly help in avoiding the adverse effects of oil palm development and in meeting up with the poverty reduction strategy put in place by the government of Cameroon.

3. Strengths and weaknesses of the smallholder oil palm sector in Cameroon

The research question was: "What are the current strengths and weaknesses of the oil palm smallholders like, especially after the collapse of the FONADER contract linking oil palm smallholders to agro-industries?" The study exposes the strengths and weaknesses faced by different types of palm oil producers. Some of the strengths possessed by the different palm oil producers include: posing little threat to the primary forest; artisanal mills, despite their low extraction rate, fetch better income; availability of a domestic and sub-regional market for the sale of palm oil; availability of abundant already cleared land which could easily be used by the different palm oil producers; basic knowledge on oil palm cultivation, though this knowledge may differ according to the type of producer.

The weaknesses exposed by the study include: the fact that none of the palm oil producers are presently in partnership with the agro-industries; very low yields partly attributed to the high cost of inputs; high cost of quality planting materials; low extraction rate of artisanal mills; absence of social security for the labor force; bad state of the roads leading to most of the oil palm plantations, resulting in high transportation cost and making transportation of FFB almost impossible; rudimentary farming tools; and land grabbing for oil palm development by elites, the absence of the marginalize group of the society, such as the youths and women who own plantations. It highlights the need for an effective partnership between the palm oil producers sector, the agro-industries and research institutions, and the need for farm inputs to be subsidized or at least made available at cheaper prices. Innovative research findings on ways to improve the yield and extraction rates/quality control measures of these artisanal mills are also required. There is also a need to maximize the utilization of oil palm by-products. The gazetting and utilization of ''already cleared land" for oil palm cultivation is necessary to limit further encroachment into the natural forest. There is also a need for further research into various intercropping models at pre-production and production stages that do not negatively affect the yield of the oil palm. It is against this backdrop that "the national strategy for the development of a sustainable oil palm sector in Cameroon" was created by

Ministry of Agriculture and Rural development decision No. 00250/CAB/MINADER/29 on July 2013, under the umbrella of MINADER, with the involvement of other key ministries and research institutions, including the Center for International Forestry Research (CIFOR). The objective is to look at ways of improving the productivity of oil palm, putting in place sustainable development procedures that take into account the social, economic and environmental realities, as well as transparency in legal and institutional frameworks geared towards the acquisition of permits for oil palm development.

4. Artisanal palm oil milling in Cameroon

The research question to answer was: "Why do the present oil palm smallholders prefer to process their FFB in artisanal mills, despite the presence of an industrial mill where they could sell their FFB? The study identified six different types of artisanal mills commonly used in the four study zones. In terms of milling efficiency semi-automated mills showed the best milling efficiency, with the poorest performance coming from manual presses. Different categories of millers and users were identified, namely mill owners, mill managers, oil palm smallholders, and middlemen. All categories were able to make a sizeable profit from their activity in the processing and marketing of red palm oil. Oil palm smallholders were found to mill part of their FFB and sell part of it to agro-industrial companies depending on the size of their farms and the season of production, while middlemen were able to mill and store red palm oil until the selling price became more profitable. Nevertheless, artisanal milling has its own setbacks. These include low extraction efficiency, old, unsafe and dilapidated mills, the absence of quality control procedures, fluctuations in the price of red palm oil for those involved in marketing and the worrying increase in theft of bunches from agro-industrial plantations. Our study finally highlights a need for improvement in the extraction efficiency and quality control measures in these mills, the need for millers and marketers to group themselves into cooperatives, and the need for developing partnerships between oil palm smallholders and agro-industries.

5. Win-win partnership between agro-industries and oil palm smallholders. Lessons from Southeast Asian experiences

The research question was: "What can be learnt from the different oil palm models in Southeast Asian countries and others from literature review, in order to generate policy recommendations for the oil palm sector in Cameroon?"

The Malaysian FELDA scheme was successful in the selection of settlers from landless people or people with land of non- economic scale. The choice and diversification of crops also helped to stabilize the income levels of settlers, as priority was given for perennial crops with the diversification from one crop to the other on newer schemes depending on the market situation. Scheme development was given strong attention by FELDA in order to ascertain that quality planting materials were made available to the scheme, together with flexibility in management style to ensure a better output. Total credit amount and interest levels together with reimbursement modalities were not so harsh for the settlers as an adequate time of 15 years was given to the farmers in order to complete the repayment of the initial loan. The diversification of FELDA in downstream companies gave an added value to the main product. The 1960 Land Settlement Act prevented settlers from selling/dividing their plots and from selling their house and it forbids the sale of FFB outside FELDA mills. The block system of plot management prevented to a large extent the sale of FFB out of FELDA mills. That notwithstanding recalcitrant settlers or their heirs continue to sell FFB from their plots outside FELDA mill, especially in second generation plantings. Oversight of FELDA activities vis-à-vis settlers is provided by a special Department from the Prime Minister's office called *Seranta*. The price of FFB is regulated by MPOB, taking into account the international market price for CPO, the variety of planting material, the age of the palms and the extraction efficiency of the industrial mill. Settlers are able to make a living from the sale of FFB from their plots, dividends from their shares at FELDA investment cooperative, as well as entrepreneurial activities. On the other hand, the FELDA scheme faced several challenges, such as delays in the installation of settlers, large bureaucratic machinery that follows a hierarchical system of management with delays on important decisions, the dependency of settlers to FELDA even after the completion of their credit and the attribution of their land certificate. More, schemes were developed without taking into consideration the environmental component of sustainable agriculture. FELDA is also accused of ethnic bias, as priority was given for the Malay ethnic group, although the uniformity in ethnic origin certainly played an important role on social cohesion in scheme villages. The development

cost per settler for housing, food crop and oil palm holdings was quite high although largely subsidized by FELDA. Labor shortage have also been noticed for second-generation plantings due to the ageing of settlers population and the fact that their sons and daughters are not interested in working in remote plantations. Fragmentation of plots by individual planters also poses a serious problem to FELDA-Technoplant which manages second-generation plantings.

PIR Trans-local also recorded successes in the selection of scheme beneficiaries as priority was given for the landless poor and the scheme was also largely subsidized by the Indonesian government. The village cooperatives played important role in negotiations with company officials for better FFB buying price, transportation of FFB to the mill as well as for the purchase and distribution fertilizers to farmers. But the multitude in cooperative could also be a favorable ground for manipulation by company officials. Land certificate is handed to the farmer after the completion of loan repayment. The advantage of plot ownership could also trigger rampant plot sale. The challenges faced by the PIR scheme include; intra and inter population conflicts, over-centralization in scheme management with a top-bottom approach in decision making, the negotiation of FFB buying price done between the company and the village cooperatives and the early sale of plots.

Under KKPA, the monthly price control committee for FFB at the provincial level ensures that smallholders are not cheated upon by the company. Priority is given for the local native population with access to land to join the scheme, thus helping to reduce intra-inter population conflicts. But the limitation here is that only land owners can have access to the scheme meaning that marginalized groups such as the unemployed youths and women cannot register. The Cooperative as an institution is very important in the success of the scheme, since it is the intermediary body that deals with both the company and farmers. The district government plays a regulatory role and does not directly fund the scheme. The decentralization of powers to the District government has brought development closer to the population and gives opportunity for District officials to stimulate, develop and provide oversight to these schemes, though to an extent some District governments are still lacking in material, financial and human resources. Cases of collusion between District officials, elites and company management at the detriment of the farmers have been reported. Plot sales and the side selling of FFB destined for company mills to middlemen have been noted for poorly managed schemes.

6. Towards a win-win partnership between agro-industries and oil palm smallholders in Cameroon !

The research question was: “What model can be developed to foster a win-win, equitable and sustainable partnership between agro-industries and oil palm smallholders in Cameroon?” The study looks at the way forward for an equitable and sustainable partnership between agro-industries and oil palm smallholders in Cameroon. It attributes reasons why smallholders and agro-industries have to enter into partnership, and also why the government has to support or provide a conducive environment for the functioning of these partnerships and how social and environmental NGO’s should support these partnerships.

For smallholders, partnership with agro-industries will offer a unique opportunity for them to step up the yield of their plantations and fetch better income, to easily get land certificates which would serves as collateral for smallholders when they need credit from Banks. Partnership is also seen as a way to provide a ready market for the sale of their FFB to agro-industrial mills.

For agro-industries, on the economic point of view, partnership is seen as a way to increase the tonnage of FFB delivered to their mills, a way to outsource labour and limit the risk related to production failure, a way to reduce their development cost. Still for agro-industries on the social point of view, partnership is seen as part of their corporate social responsibility to their surrounding population, a way to build social peace and cohesion which will eventually redress the theft of FFB currently on the rise in agro-industrial plantations, since the locals will become active stakeholders in plantation business. On the environmental point of view, partnership with smallholders could help government limit the number of permits to agro-industries to open new plantations on the natural forest. This is in line with RSPO principles and criteria which emphasize the need for agro-industries to open smallholdings for the local and indigenous population and avoid further deforestation.

At the level of the government, partnership between agro-industries and oil palm smallholders is seen as a way to fight poverty and build a stronger smallholder sector. On the economic point of view, partnership is seen as a way for the government to collect taxes through smallholder delivery to agro-industrial mills, the abandonment of artisanal mills with low extraction rates and poor quality oil, the utilization of all main products and by-products supplied to the industrial mills, and the increase in domestic CPO production which will eventually limit the importation of CPO, since 2/3 of the plantation surface areas are in the

hands of oil palm smallholders. On the social and environmental point of view, partnership will be a way for the government to fight fruit theft, and limit the conversion of the natural forest for oil palm development.

On the part of the environmental and social NGO's partnership is seen as a way of enforcing social cohesion, fight poverty and reduce the negative impact that arises from oil palm development on the environment.

The next question of interest is how should the partnership be organized?

- This will involve main and support institutions, together with their responsibilities. For the main institution, we have the following:

  Government: the government should be a facilitator and regulator of the partnership under favorable conditions. This should be seen in the modalities for the selection of scheme participants, in facilitating access to land/land titles for both agro-industry and local beneficiaries of the project, in the selection of private banks to provide the credit at affordable interest rates, scheme development cost, contract elaboration, subsidizing the cost of inputs either by reducing taxation on the imported inputs or by avoiding that a single firm monopolizes the importation of inputs, the maintenance of major roads for easy evacuation of products to big market.

  Agro-industries: the agro-industry should create a department in charge of smallholders and this entity should be separated from estate management. It should have its own budget, personnel, transportation logistics and "heavy" equipment if possible. The agro-industry through its smallholder department should prepare the land, plant and manage the plantation for the smallholders until total credit has been reimbursed. Provide managerial and technical capacity building for best plantation management practices to smallholders. Assist the smallholder cooperative with the help of government to facilitate the elaboration of a land certificate for the smallholders. Create a ready market for fresh fruit bunches coming from smallholder plantations. The pricing of these FFB should consider not only the CPO but also other products like the PKO and by-products like EFB, fibre, shell, kernel cake and POME, etc.

  Oil palm smallholders: the smallholders should group themselves in cooperatives and elect members into key positions of responsibilities. This will help to ease the working

relation between smallholders and the agro-industries. The cooperative works hand in hand with the agro-industrial unit in charge of smallholders and assumes total control of *plasma* management after total credit reimbursement, with technical assistance from the agro-industry. All the bunches from the plasma plantations are supplied to the agro-industrial mill. Payments for smallholder FFB should be endorsed by the cooperative management and the smallholder department of the agro-industry.

Bank: Facilitate access to credit for smallholders through agro-industry/smallholder cooperative. Collect land certificate for smallholders plot as collateral until total credit has been repaid. Use agro-industry/smallholder cooperative as "security" in case smallholders don't repay their credit.

Meanwhile for support institutions, we have:

Research institutions: Produce and make available quality/certified planting material to agro-industries and smallholder cooperative. Make available data on ways to combat major pests and diseases in oil palm plantation. Recommend fertilizer types and rates depending on the age of oil palm and agro-ecological conditions for optimal production. Recommend best management practices in oil palm plantations with little threat to the environment.

Companies that sell inputs: Make available and on time, fertilizers, herbicides and pesticides at affordable prices, together with equipment used for their application.

Independent transporters: This includes transporters for FFB, CPO and related products.

Wholesalers and retailers of CPO and related products: This includes those who buy and sell CPO and related products to downstream or second transformation industries, as well as consumers.

Downstream companies: These include companies that make use of CPO, PKO for the production of refined palm oil, soap, and other related products.

Local councils: Contribute to the maintenance of major roads and bridges and help in the collection of taxes.

Social and environmental NGO's: Assist in the implementation of social and environmental impact assessment (SEIA) of new plantations for both agro-industry and oil palm smallholders. Assist in the elaboration of free, prior and informed consent (FPIC) between agro-industry and local population in areas where oil palm plantations are supposed to be developed. Reinforce the capacity of both the company

management and smallholder cooperative/smallholders on sustainable environmental practices. Assist in the elaboration, monitoring and evaluation of field implementation of the contract binding agro-industry and smallholder cooperative.

- A legalized contract is needed that stipulates the individual and joint responsibilities of each stakeholder in the partnership. The development of this contract should involve all the stakeholders with the use of an independent consulting firm.
- The mechanism of the scheme should be such that the scheme development committee comes up with a budget for the development and maintenance of the scheme during its immature period. This budget should be endorsed by the government, following the free market condition of the period, with some degree of flexibility in case of any eventuality. This money should be borrowed by the cooperative, but the money should not enter the cooperative account. It goes directly into the account of the company. The company should work hand-in-hand with cooperative management to facilitate the establishment of land certificates for beneficiaries of the scheme, with the help of the competent government departments. When these land certificates are established, they should be handed to the bank that granted the loan, to serve as collateral, until the credit has been repaid. The company on its part is supposed to set aside some funds to complement the timely re-payment of the credit.

  A= Credit for development and maintenance of oil palm plantation during immature period.

  B= Interest rate.

  Total credit = A+B/100(A)

  Given that the duration of repayment as stipulated by the bank is after 4 years when palms must have started producing, with a 6 years repayment schedule. This implies repayment per year= (A+B/100(A)) × % based on age of palm, while monthly repayment of credit = ((A+B/100(A)) × % based on age of palm) × (% based on the month of the year).

  In deductions from income of FFB supplied from smallholder plantations, priority should be given first for the re-imbursement of the credit, secondly the estimated field operational cost for that month, thirdly should be money to pay cooperative management together with any deductions that has to do with the cooperative operational cost and lastly, the left over is handed to the farmer.

The company uses its technical know-how to develop plasma plantations for smallholders with quality planting materials purchased from research institutions. The company manages this plantation during the immature period before the palms starts producing. When the palms start producing, the company continues to manage smallholder plantations and relinquishes powers progressively to the cooperative through capacity building of cooperative management. When the credit has been completely reimbursed, the management of plasma plantations is handed over to the cooperative, but the company will still be there to provide technical supervision on the activities of the cooperative.

- Concerning pitfalls to be avoided; for the block system of plasma management, it is not advisable for farmers to know the location of their plots. This is important to avoid that they sell the plots to third parties even before they start reaping the benefits from their palms. The share system of scheme management can be implemented where farmers are not attributed individual plots until the total credit has been repaid. They get dividends based on the plot area surrendered for the scheme and get paid on field operations performed. Farmers can be attributed plots when their credits are completely reimbursed. At this stage the production from the palms would have been very encouraging and farmers will no longer be tempted to sell their plots.

  In order for the scheme to succeed, the cooperative should be managed as an independent entity with no collusion with the officials of the smallholder department in the company. Constant dialogue between company and cooperative management and between cooperative management and the farmers is needed in a transparent and corrupt-free environment.

  The sale of FFB to artisanal mills and to smallholders who have completed the repayment of their credit can be avoided through favourable pricing of FFB plus the attribution of bonuses and premium for quantity and quality of FFB by the committee responsible for this pricing on a monthly basis. The prompt payment of farmers, the maintenance of plantation roads and the provision of logistics for the timely evacuation of FFB immediately after harvest in order to prevent weight loss.
- With respect to some conditions that must be taken into consideration for the success of a win-win, equitable and sustainable partnership, we divided this part into primary and secondary conditions. The primary conditions are those which are absolutely necessary for the smooth functioning of the scheme, while the secondary conditions

also have an influence on the scheme, but this influence is not as 'heavy' as the primary conditions.

These primary conditions include:

- the need for a strong political will by the government to regulate the sector;
- the need for transparency at all levels of the partnership;
- the putting in place of a committee with duty to elaborate and legalize the contract binding smallholders and agro-industries, scheme development and management, credit establishment and re-imbursement modalities, monitoring and evaluation of the scheme, regular FFB price setting taken into cognisance the demand of CPO.
- selection of participants to be part of the scheme with priority given for the poor, youths, single women and widows and most especially persons with ancestral claims to the land use for the development of agro-industrial plantations;
- the need for independent auditors to constantly evaluate the accounts of the cooperative and the smallholder department of the company;
- managerial and technical capacity building from agro-industries and other relevant institutions to the cooperatives and subsequently to the farmers;
- the need for agro-industries to create a department to work with smallholders;
- the setting up of a viable cooperative with elected members;
- the need for the cooperative to own shares in the agro-industrial mill;
- the yield of *plasma* plantation should be attractive enough;
- rehabilitation of agro-industrial mills;
- regular road maintenance;
- availability of labour.

Meanwhile the secondary conditions include:

- land selection for oil palm development;
- the surface area per smallholder for the formation of a cooperative;
- attribution of ownership to oil palm plots when the credit has already been repaid;
- representation of cooperative in company board of directors meetings;
- assets and income levels of farmers should be high;
- the avoidance of land conflicts with priority given to native-local population to be part of the scheme;
- deduction of compensation for cooperative management;

- ffb theft control for both agro-industrial and smallholder plantations;
- replanting savings;
- development of downstream industries to add more value to the primary product;
- premium and bonuses for the quality and quantity of bunches delivered respectively.

- With respect to the planning of operations, the following points are necessary to consider in order to meet up with datelines: company will definitely need an operational license from the government; an environmental and social impact assessment is needed for the success of the project; socialization with the local and indigenous communities who lay customary claims to land; selection of scheme beneficiaries; election of cooperative management from selected beneficiaries; development of a legal contract to bind the selected beneficiaries and the agro-industry by an independent consultancy firm, involving both stakeholders; summation of scheme development and maintenance cost at immaturity by scheme development committee; endorsement of scheme development and maintenance cost at immaturity plus interest rate by the government; collection of loan by cooperative and putting on the company's account; scheme development and maintenance during immaturity by company; commencement of loan repayment as soon as palms start producing after 4 years. This repayment is done for 6 years (i.e. until the 10^{th} year); partitioning of plots to scheme beneficiaries in the presence of relevant government departments; handing over of plasma management to cooperative after total credit repayment is completed, but then company will have to provide technical advice to cooperative management.

In conclusion, the various partnership schemes supported by the different Governments are a laudable initiative to fight poverty for the rural masses through the involvement of agro-industries/institutions with much experience in the oil palm sector. For such initiatives to succeed, there is need for a strong political will from the Governments, companies, cooperatives and other stakeholders. All must be willing and able to work hand in hand, in a transparent and corruption-free manner in order to make sure that contracts and agreements jointly developed, legalized, are duly respected. There is also a need for transparent/corruption-free measures to be enforced at the level of the company's activities with the cooperative and vice-versa, and at the level of the cooperative activities with the farmers and vice-versa. Monitoring and evaluation committees must be set up by Governments and should also include civil society organizations, conservation and social NGOs and other stakeholders. Such committees will be in charge of constantly overseeing

the activities of the company and the farmers, in order to avoid future problems between both parties. This political will should be translated in the selection of beneficiaries for the scheme where priority should be given to the poorer layers in the society. The credit necessary for scheme development, interest rates stipulated by the bank, re-imbursement modalities, the individual and joint obligations of the contract binding the smallholders and the agro-industries are all important ingredients necessary for the success of any scheme. A win-win and equitable partnership will lead to sustainability in income levels for the beneficiaries, generate employment opportunities and fight poverty, provided production levels and market prices for FFB are high and deduction levels are moderate for the farmers. When company officials work hand-in-hand with the local population by developing and jointly managing *plasma* plantations with them, locals will feel involved in the company's business. This to an extent will reduce the number of conflicts registered between locals and company. Conflicts usually happen when land in which local population claim customary rights is ceded to agro-industries without prior socialization between company officials with the local population. Another positive side for partnership is that it could result in a reduction in further conversion of the forest for oil palm development. When companies get part of their production from smallholder plots, this may limit their ambition to open more forest to cultivate oil palm. Most often, the locals utilize land that was already deforested before the coming of the agro-industry. In Cameroon, the presence of the artisanal milling sector and the domestic market for the sale of red palm oil makes one to believe that the road to partnership is not a bed of roses, and thus there is a strong need for appropriate regulations and proper oversight in order to ensure equitability and sustainability in the partnership.

RESUME : LES CONDITIONS DU DEVELOPPEMENT DURABLE DES PLANTATIONS VILLAGEOISES DE PALMIERS A HUILE AU CAMEROUN

Une culture ne peut être accusée de détruire la forêt naturelle, d'accaparer les terres des populations locales et d'exploiter la main d'œuvre ouvrière. Ce n'est pas la culture en tant que telle mais le modèle de développement agricole retenu qui est en cause. L'agriculture est une activité consommatrice d'espace, entrainant déforestation et pollution si des mesures de développement durable ne sont pas mises en place. Par le passé, très peu a été fait pour promouvoir des pratiques agricoles durables sur le terrain, particulièrement dans le secteur du palmier à huile.

Pendant la dernière décennie, de nombreuses ONG de conservation et des organisations de la société civile ont essayé d'inciter les gouvernements de la région à imposer des principes de durabilité à l'industrie. Diverses actions sur les marchés agricoles et les usagers en aval ont permis de promouvoir des techniques propres au développement durable. Il est aujourd'hui unanimement admis que l'agriculture durable est le seul moyen de garantir les besoins de la génération présente sans compromettre les besoins de la génération future. C'est une approche holistique qui tient compte des perspectives sociales, environnementales et économiques dans sa stratégie de développement.

Bien que le palmier à huile soit originaire des pays d'Afrique centrale et occidentale, aucun de ces pays n'est aujourd'hui autosuffisant dans ses deux produits principaux : l'huile de palme et l'huile de palmiste. L'insecte pollinisateur (*Elaeidobius kamerunicus*) et la principale variété cultivée (tenera) ont été découverts au Cameroun. Paradoxalement les pays d'origine du palmier à huile africain sont aujourd'hui des importateurs nets d'huile de palme provenant de pays où la culture est considérée comme exotique : Malaisie et Indonésie.

Dans les années 1960, juste après l'indépendance, les programmes de développement du secteur du palmier à huile dans la plupart des pays africains furent un succès indéniable en termes de superficies développées par les agro-industries et par les plantations villageoises, autant en matière qualité des semences qu'au niveau de l'entretien technique des plantations. Ceci a permis aux planteurs d'obtenir des rendements élevés, comme cela a été le cas pour les projets du FONADER (Fonds national pour le développement rural) au Cameroun. Au cours de la période du FONADER d'énormes succès ont été obtenus dans le secteur du palmier à huile par les petits planteurs au Cameroun. Toutefois, les nombreuses défaillances dans la planification et l'exécution du programme ont conduit à l'effondrement du FONADER et mis

un terme au partenariat entre agro-industries et petits planteurs de palmier à huile. Ces derniers sont aujourd'hui abandonnés à eux-mêmes et en dépit de divers efforts du gouvernement pour améliorer la compétitivité du secteur par le biais du PDPV (Programme de Développement des Palmeraies Villageoises), il reste beaucoup à faire. En raison de moyens insuffisants, seul un faible pourcentage des petits planteurs peut être atteint par ces projets.

Aujourd'hui les petits planteurs indépendants de palmiers à huile souffrent d'un accès difficile au matériel végétal de qualité, aux engrais et produits phyto-sanitaires, au crédit bancaire et au marché d'exportation. Toutes ces difficultés se traduisent par des rendements très faibles inférieurs à 1 t d'huile brute (CPO)/ha/an. En comparaison, les petits planteurs en Indonésie et en Malaisie impliqués dans des partenariats avec des agro-industries peuvent enregistrer des rendements de 3,5 à 4 t CPO/ha/an. A l'heure actuelle plus de 40% de l'huile de palme produite dans ces deux pays provient des petits planteurs. Au Cameroun, alors que les plantations villageoises couvrent une surface pratiquement double de celle des agro-industries, elles ne produisent que le tiers de la production nationale de CPO.

Les deux géants du secteur du palmier à huile, Indonésie et Malaisie ont également mis en place plusieurs programmes de développement des petits planteurs de palmier à huile dans leurs pays respectifs. Les deux gouvernements ont non seulement utilisé le palmier à huile pour développer le secteur agro-industriel, mais ils ont également utilisé le palmier à huile pour développer des petites plantations pour les masses rurales, afin de réduire la pauvreté. Les deux pays ont fait montre de flexibilité et d'innovation dans leurs programmes de développement. En Indonésie, par exemple, le gouvernement a promu le système PIR ('*Perkebunan Inti Rakyat*') où un grand nombre de petits planteurs, migrants et autochtones, entourent un noyau formé par une plantation industrielle équipée d'une unité de transformation. Le programme KKPA (*Koperasi Kredit Primer Untuk Anggota*) ou « crédit coopératif primaire pour membres » avait pour objectif de développer des petites plantations de palmiers à huile pour la population locale afin de soulager les tensions sociales entre les populations locales et migrantes. En Malaisie, dès le milieu des années 1950 le gouvernement a utilisé l'hévéa et plus tard le palmier à huile pour développer de petites plantations confiées à des colons bénéficiaires du programme FELDA (Autorité fédérale de développement foncier). Tout n'était pas parfait dans ces programmes, loin de cela. Mais les deux gouvernements étaient tout à fait flexibles et innovateurs dans leur gestion. Par exemple, le gouvernement indonésien a commencé par financer l'ensemble du programme, puis,

confronté à la crise économique asiatique des années 1990, le gouvernement a incité le secteur privé à prendre la suite des opérations, se contentant d'encadrer le crédit et de faciliter l'accès à la terre. De son côté le gouvernement malaisien mettait en place un programme de développement quinquennal pour le programme FELDA, et s'assurait qu'il remplisse ses objectifs de plan en plan. A eux deux, Indonésie et Malaisie assurent aujourd'hui 87% de la production mondiale d'huile de palme.

En raison de la pression croissante exercée par les consommateurs du Nord sur les grandes entreprises de transformation, et de l'action des organismes de certification comme RSPO (Table ronde pour l'huile de palme durable), ISPO (Huile de palme durable indonésienne), les grandes compagnies de plantations ont pris conscience de la nécessité de mettre en oeuvre des pratiques durables de production de l'huile de palme. En Indonésie et en Malaisie, les compagnies sont progressivement contraintes de se conformer aux principes de durabilité imposés par leurs gouvernements respectifs ou par des organismes internationaux.

Certaines compagnies du Sud-Est asiatique cherchent à s'implanter au Cameroun ou dans d'autres pays de la région pour développer des plantations suite à la demande globale accrue en huile de palme brute. Ces compagnies sont attirées par plusieurs facteurs favorables : un climat approprié à la culture, des terres abondantes, une main d'œuvre bon marché, l'existence d'un marché local et, non le moindre, une gouvernance faible. Au Cameroun, par exemple, depuis 2009, un total d'environ 1 million d'hectares de terre a été sollicité par des agro-industries, la plupart du temps du Sud-Est asiatique mais pas seulement, pour développer des plantations de palmiers à huile. Même si les superficies demandées ne sont que rarement converties en plantations de palmier à huile dans leur totalité, cette forte demande est un signal fort. Il est clair que le secteur est en plein développement. La question qui se pose alors est : quel modèle de développement faut-il privilégier pour le secteur du palmier à huile au Cameroun?

Le Cameroun a déjà éprouvé chacun des trois grands modèles de développement connus pour le secteur du palmier à huile, à savoir : le développement de plantations villageoises indépendantes, les plantations agro-industrielles, et les partenariats entre plantations villageoises et les agro-industries. Alors que les agro-industries sont plus efficaces en termes d'équipement, de transformation, de connaissances techniques et de gestion, toutes choses qui se traduisent par de meilleurs rendements et un taux d'extraction plus élevé ; l'agriculture

familiale présente un meilleur bilan en termes de création d'emplois, d'allégement de la pauvreté et de justice sociale.

Le meilleur choix ne serait-il pas d'associer agro-industries et petits planteurs au sein d'un partenariat gagnant-gagnant, équitable et durable ? Au Cameroun, un tel système demande encore à être mis au point.

Les principaux problèmes auxquels sont confrontés les plantations villageoises de palmiers à huile au Cameroun sont :

- Le secteur des plantations villageoises souffre de rendements très bas, du vieillissement des plantations, du coût élevé des engrais et des semences séléctionnées, du manque d'informations techniques, de l'absence d'établissements bancaires prêtant avec des taux d'intérêt abordables, et du mauvais état des pistes et routes de la plantation au marché.

- L'effondrement du programme de développement du FONADER dans les années 1990 a perturbé voire mis un terme aux relations entre les plantations villageoises et les agro-industries. Malgré diverses tentatives du gouvernement pour améliorer le secteur des plantations villageoises après 1990, peu de succès ont été enregistrés. Quelques compagnies étrangères de palmiers à huile se sont implantées, mais aucun modèle de dévelopement durable n'a réellement été testé au Cameroun. Ce n'est qu'en 2013 que le gouvernement a mis en place un comité pour rédiger un document national de stratégie pour le développement durable du secteur du palmier à huile au Cameroun.

- Les tensions sociales entre la population locale et les agro-industries déjà établies deviennent de plus en plus difficiles à gérer. Les nouveaux arrivants ont également fait les frais de ces tensions. La mise en œuvre de partenariats équitables entre agro-industries et petits planteurs devrait être bénéfique aux deux parties, fournir de meilleures conditions de travail, améliorer les conditions de vie des petits planteurs et contribuer à soulager la tension sociale.

- La nécessité de préserver la forêt afin de réduire l'impact du déboisement sur la perte de biodiversité et le réchauffement climatique va également dans le sens d'un soutien aux petits planteurs. En effet, les plantations villageoises sont préférentiellement installées à proximité des villages et des axes de circulation, sur des terrains déjà défrichés par le passé.

- Le Cameroun est également un importateur net d'huile de palme brute, avec des quantités de 50 000 tonnes de CPO en 2011, et de 80 000 tonnes en 2012, et environ 100 000 tonnes en 2013. Bien que le secteur des plantations villageoises occupe les 2/3 de la superficie totale de plantation, il ne produit que 1/3 du CPO.

L'objectif de cette étude est d'établir un état des lieux du secteur du palmier à huile au Cameroun et du sous-secteur des plantations villageoises en particulier. Une attention particulière est portée à l'évolution des partenariats entre agro-industries et petits planteurs. L'étude s'inspire également des leçons positives et négatives issues des partenariats testés et mis au point en Asie du Sud-Est pour les adapter aux conditions spécifiques du Cameroun.

Les objectifs spécifiques de l'étude sont présentés dans les chapitres :

- Chapitre 2: Histoire des partenariats entre les agro-industries et les plantations villageoises de palmiers à huile au Cameroun. Ce chapitre (i) retrace les changements survenus dans l'industrie du palmier à huile au cours du temps; (ii) décrit les divers acteurs impliqués et (iii) analyse les différents partenariats mis en place, leur évolution au cours du temps, leurs réussites et leurs échecs. Ce chapitre est publié dans la revue internationale sur les graines oléagineuses et les matières grasses, les cultures et les lipides –OCL, (Nkongho et al., 2015).

- Chapitre 3 : Forces et faiblesses du secteur des plantations villageoises de palmiers à huile au Cameroun. L'étude recense les forces et les faiblesses du sous-secteur, et propose des voies d'amélioration. Ce chapitre est publié dans la revue internationale sur les graines oléagineuses et les matières grasses, les cultures et les lipides-OCL, Nkongho et al. (2014) et aussi comme un document de travail du CIFOR (Nkongho et al., 2014).

- Chapitre 4 : Huile de palme et presses artisanales au Cameroun. Ce chapitre cherche à évaluer la rentabilité des presses artisanales et de la production d'huile de palme rouge. Plus spécifiquement, il identifie les différents acteurs impliqués dans la production d'huile rouge, les taux d'extraction des divers types de moulins artisanaux, les mesures de contrôle de qualité mises en place pendant le traitement des FFB, la rémunération du travail, les coûts de la transformation et la contribution aux revenus des ménages. Le chapitre identifie les acteurs impliqués dans la vente d'huile de palme rouge sur le marché national, les chaînes de valeur

(grossistes et détaillants), l'évolution et las fluctuations des prix de l'huile de palme rouge sur le marché local au cours des années, la contribution financière de la vente d'huile de palme rouge pour les ménages. Il recense enfin les principaux problèmes gênant le fonctionnement normal du secteur. Ce chapitre est publié dans le Journal africain de la recherche agricole-African Journal of Agricultural Research, (Nkongho et al., 2014).

- Chapitre 5 : Les partenariats gagnant-gagnant entre les agro-industries et les plantations villageoises de palmiers à huile : Leçons des expériences du Sud-Est asiatique. Ce chapitre étudie les avantags et les inconvénients des divers partenariats mis en oeuvre en Asie du Sud-Est au cours des années, notamment les modèles FELDA en Malaisie et les modèles PIR et KKPA en Indonésie. Les travaux de terrain sont complétés par une revue de la littérature sur le sujet, autant en Asie du Sud-Est que dans d'autres régions du monde. Ce chapitre est en cours de publication.

- Chapitre 6 : Perspectives : Vers un partenariat gagnant-gagnant entre les agro-industries et les plantations villageoises de palmier à huile au Cameroun. Ce chapitre jette les bases des modalités devant être mises en place pour parvenir à un partenariat gagnant-gagnant, équitable et durable entre les agro-industries et les plantations villageoises de palmiers à huile au Cameroun. Ce chapitre sera publié comme une note politique -CIFOR Policy brief, (Nkongho et al., forthcoming).

Cameroun :

Au Cameroun, les études de terrain ont été effectuées dans quatre des sept grands bassins de production d'huile de palme, à savoir Eseka dans le Nyong et Kelle, Dibombari dans le Mungo, Muyuka dans le département de Fako, et Lobe dans le département de Ndian. Les agro-industries impliquées incluent les plantations de Pamol, de la Cameroun Développement Corporation (CDC) et de la SOCAPALM. L'objectif des recherches de terrain consistait àétudier les rapports entre agro-industries et petits planteurs existant dans le passé (projet FONADER entre 1978 à 1990) et leur évolution plus récente.

Le premier objectif de l'étude consistait à étudier la mise en place des partenariats et leur évolution suite à l'effondrement du FONADER dans les années 1990. Dans un deuxième temps nous avons développé une typologie des plantations villageoises, réparties entre :

villageois, élites, employés des compagnies et migrants. Les interviews personalisées ont recencé des critères comme le statut social, niveau de revenu, lieu d'origine, profession, travail présent et passé, etc. Les degrés d'instruction, catégorie d'âge, comme la répartition de genre des villageois ont également été pris en compte. L'ampleur de l'empiétement des plantations villageoises sur la forêt primaire et le rendement et le revenu de la culture de palmier à huile. Enfin, nous nous sommes intéressés aux raisons pour lesquelles les villageois ont adopté les presses artisanales, les types de presses utilisées, les taux d'extraction des moulins et les avantages dérivés du traitement et de la vente d'huile de palme rouge, au lieu de fournir les FFB aux moulins agro-industriels. A l'issue des études de terrain, nous avons également organisé trois ateliers participatifs de prospective réunissant divers protagonistes impliqués dans le secteur du palmier à huile pour connaitre leur avis sur le modèle de développement qu'ils estiment être le plus approprié pour le Cameroun. Tous les participants furent unanimes pour considérer qu'un partenariat équitable entre petits planteurs et agro-industries était le meilleur modèle pour le développement durable du secteur au Cameroun.

Malaisie et Indonésie :

L'étude du modèle FELDA malaisien et des arrangements indonésiens de PIR et de KKPA devait nous permettre de faire le point sur les expériences les plus abouties en matière de partenariat entre agro-industries et petits planteurs. Les deux poids lourds de la production d'huile de palme ont testé et adapté plusieurs modèles de partenariat au cours du temps. L'analyse critique de ces expérimentations, autant ses réussites que ses échecs, devrait nous permettre de produire des recommandations concernant le modèle d'association le plus apte à stimuler une collaboration efficace entre petits planteurs et agro-industries au Cameroun.

En Malaisie, nous avons été en mesure d'étudier le modèle mis en place par FELDA à Besout, dans l'état de Perak, dans le district de Batang Padang et le sous-district de Sungkai. En Indonésie, l'étude a été effectuée dans des provinces de Jambi et de Riau. Les compagnies étudiées incluent PT. SAL et PT. Megasawindo (Jambi) situées dans le district de Bungo (sous-district de Pelepat) et de PT. Musim Mas (Riau) située dans le district de Palalawan, sous-district de Sorek. Un large échantillon comprenant des employés des compagnies, des planteurs sous contrat, des planteurs indépendants, des intermédiaires, ainsi que les autorités de district a été interviewé au cours de l'étude.

Le modèle de FELDA de Besout en Malaisie est l'un des partenariats les plus anciens. Il a débuté en 1974. En Indonésie, PT. SAL ne possède aucune plantation industrielle sur le site et

n'est pas encore certifiée RSPO ou ISPO. L'accord entre les parties prévoit que l'ensemble des fruits produits doit obligatoirement être livré au moulin industriel. PT. Megasawindo n'était pas encore certifiée RSPO ou ISPO lors de l'étude. Le partenariat étudié liait Megasawindo à des planteurs autochtones suivant le modèle KKPA. PT. SAL suit le modèle plus classique d'une plantation industrielle entourée de petites plantations sous contrat en périphérie. Enfin, PT. Musim Mas à Sorek est une plantation certifiée RSPO et ISPO, entre autres. La certification RSPO concerne non seulement la compagnie mais également les petits planteurs sous contrat KKPA, une première en Indonésie.

Collecte de données:

Les travaux de terrain ont été complétés par la revue de littérature sur internet et dans les bibliothèques des établissements de recherches et des universités, dans les archives des compagnies agro-industrielles et de diverses instances gouvernementales. Des questionnaires semi-structurés ont été administrés à un grand nombre de petits planteurs, aux cadres et ouvriers des compagnies, aux fonctionnaires du gouvernement, aux ONG, aux gestionnaires de moulins artisanaux et industriels, ainsi qu'à des grossistes et des détaillants d'huile de palme. Des groupes de discussions ont été également organisés faisant participer des villageois, des chefs d'entreprises, et des fonctionnaires du secteur public et privé, sans oublier les représentants de la société civile. Des observations de terrain ont également été faites dans les plantations villageoises et industrielles, ainsi que dans les moulins artisanaux et industriels.

La question fondamentale que nous cherchons à adresser est:

Un partenariat gagnant-gagnant, équitable et durable entre petit planteurs et agro-industries est-il en mesure de répondre aux défis présents du secteur camerounais du palmier à huile?

Pourquoi un partenariat entre agro-industries et petits planteurs?

Nos hypothèses de départ étaient que :

- L'association entre petits planteurs et agro-industries peut mener à une augmentation de l'utilisation de terres déjà défrichées et ainsi réduire la pression sur la forêt primaire;
- L'association entre petits planteurs et agro-industries peut mener à une réduction de la tension sociale à laquelle font face les compagnies ;

- L'association entre petits planteurs et agro-industries peut aider à la responsabilisation des populations locales et contribuer à la réduction de la pauvreté rurale ;
- L'association entre petits planteurs et agro-industries peut réduire le niveau du vol de fruits dont souffrent les agro-industries.

2. L'histoire des partenariats entre agro-industries et petits planteurs au Cameroun

La question de recherche du chapitre 2 concernait l'histoire du partenariat dans le secteur du palmier à huile au Cameroun, et plus particulièrement les raisons à l'origine de l'effondrement du programme FONADER, en tant que première tentative de partenariat. L'étude historique montre qu'avant l'indépendance et la réunification du Cameroun en 1961, très peu a été fait pour établir des partenariats entre les agro-industries et les petits planteurs. Tandis que les agro-industries comme Pamol et CDC tiraient bénéfice de l'utilisation des variétés hybrides *tenera* et amélioraient leurs taux d'extraction, les petits planteurs ne récoltaient que les variétés de type *dura* à faible rendement en huile, et issues de palmeraies naturelles ou sub-spontanées, ou de plantations agroforestières mal entretenues. Les méthodes artisanales de pressage avaient des taux d'extraction très faibles et produisaient une huile rouge de qualité très variable.

Après l'indépendance et la réunification, pour augmenter la production d'huile de palme et combattre la pauvreté, le gouvernement du Cameroun a établi la SOCAPALM suivant un modèle *Nucleus Estate and Smallholders* (une plantation industrielle entourée de petits planteurs sous contrat). Ce modèle a été étendu à la CDC et Pamol par l'intermédiaire du développement du FONADER. 1978 et 1990, le projet allait fournir aux petits planterus une assistance technique de qualité, du matériel végétal séléctionné, et des engrais, des herbicides et des pesticides à des taux subventionnés. projet a également connu de nombreuses défaillances, et au final le FONADER a fait faillite. ont utilisé leur position ou relations dans l'administration pour détourner à leur avantage un programme qui était destinés aux pauvres. En outre, le projet a surtout visé les propriétaires fonciers et ne proposait rien pour les populations marginalisées comme les jeunes et les femmes sans emploi. Enfin, les contrats liant les petits planteurs et les agro-industries ont été imposés aux planteurs sans possibilité de négociation.

Le projet a également été inefficace en matière de surveillance et d'évaluation par des instances indépendantes. compagnies n'étaient pas incitées à vérifier que les planteurs avaient

remboursé leur crédit, le prêt venant d'un établissement tiers. Les planteurs se plaignaient de l'absence de transparence quant au montant total à rembourser ainsi que sur les modalités du remboursement. Après la faillite du FONADER et la mise en œuvre des plans d'ajustement structurels, le gouvernement n'a fait que très peu pour développer le secteur de palmier à huile et pour stimuler l'association entre petits planteurs et agro-industries. Le projet 'villagisation' financé par Afriland First Bank, un projet pilote de SOCAPALM Eseka, présente de nombreuses similitudes avec le FONADER, souffrant visiblement des mêmes imperfections.

Par opposition à d'autres cultures pérennes comme le cacao, le café et le caoutchouc qui dépendent beaucoup du marché international, l'huile de palme bénéficie d'un marché domestique et sous régional en pleine croissance. Les surfaces cultivées en palmiers à huile par les agro-industries sont demeurées relativement stables au cours des années tandis que les palmeraies villageoises se sont beaucoup étendues sur une période relativement courte, mais avec des rendements très faibles. Avec l'arrivée de nouvelles compagnies de plantations de palmiers à huile au Cameroun et l'intérêt montré par les compagnies déjà établies pour étendre leurs plantations, des changements cruciaux (positifs et négatifs) sont en cours ou à prévoir. Les nouveaux venus comme les anciens demanderont à l'Etat de leur octroyer de vastes zones à développer pour leurs plantations. L'Etat devra faire face à de telles demandes tout en évitant la dépossession des terres des populations locales et une pollution accrue. Le marché domestique et sous-régional peut rapidement être saturé, ce qui nécessitera la recherche de nouveaux marchés non seulement pour des agro-industries mais également pour les plantations villageoises.

Il existe une demande forte pour la mise en œuvre d'une transparente et innovatrice par le gouvernement, visant à renforcer les partenariats entre les agro-industries et petits planteurs. imperfections de la FONADER et Afriland First Bank. Des partenariats équitables, flexibles, mutuellement bénéfiques et durables doivent être mis en place. De tels partenariats devraient éviter les effets nuisibles du développement du palmier à huile et satisfaire la stratégie de réduction de pauvreté mise en place par le gouvernement du Cameroun.

3. Les forces et faiblesses du secteur des palmeraies villageoises au Cameroun

La question de recherche du chapitre 3 était: "quelles sont les forces et les faiblesses du secteur des plantations villageoises, particulièrement après l'effondrement du FONADER". Parmi les forces du secteur, l'étude souligne l'impact limité du développement des plantations villageoises sur la forêt primaire; le revenu plus élevé, malgré des rendements faibles, assuré par les presses artisanales; marché intérieur et sous-régional pour l'huile de palme; l'abondante disponibilité de terres déjà défrichées qui pourraient facilement être utilisées par les petits producteurs; la bonne connaissance de base de la culture du palmier à huile, bien que cette connaissance varie beaucoup suivant le type de producteur.

Les faiblesses exposées par l'étude incluent: le fait qu'aucun des producteurs d'huile de palme n'est actuellement dans un partenariat avec les agro-industries ; taux d'extraction des moulins artisanaux ; absence de sécurité sociale pour la main-d'œuvre; mauvais état des routes et pistes entre les plantations et les moulins ; outils agricoles rudimentaires; et enfin les accaparements de terres par les élites, et le peu d'attention porté aux groupes marginalisé : jeunes et femmes. Toutes ces faiblesses accentuent le besoin d'un partenariat efficace entre les producteurs d'huile de palme, les agro-industries et les établissements de recherches; la nécessité de subventionner les intrants et d'améliorer leur disponibilité ; la diffusion des bonnes pratiques de culture et des résultats de la recherche ; et l'amélioration des taux d'extraction des presses artisanales. L'utilisation des sous-produits de la production d'huile de palme doit encore être améliorée. Palmistes et tourteaux sont trop souvent gaspillés dans les moulins artisanaux. La délimitation des terres déjà défrichées pour un usage prioritaire permettrait limiter l'empiétement des palmeraies sur la forêt naturelle. Il y a également un besoin de davantage de recherche sur l'implantation de cultures vivrières intercalaires dans les premiers stades de la plantation (sans affecter négativement les rendements ultérieurs du palmier à huile).

C'est dans ce contexte que le Ministère de l'agriculture et du développement rural a mis en place un groupe d'étude pour la rédaction d'une "stratégie nationale pour le développement durable du palmier à huile au Cameroun" (Décision : 00250/CAB/MINADER/29 juillet 2013). Sous l'auspice du MINADER, ce groupe reçoit les contributions de plusieurs ministères concernés, d'instituts de recherche (Cirad, IRD, CIFOR) et de nombreuses ONG. L'objectif du groupe est d'améliorer la productivité du palmier à huile en mettant en place des procédures soutenables de développement qui tiennent compte des réalités sociales,

économiques et environnementales, ainsi que la transparence dans les cadres légaux et institutionnels nécessaires à l'acquisition des permis pour le développement du palmier à huile.

4. Huile de palme et presses artisanales au Cameroun

La question de recherche du chapitre 4 était : pourquoi est-ce que les petits planteurs préfèrent traiter leur FFB dans des moulins artisanaux, en dépit de la présence d'un moulin industriel à proximité?

L'étude a permis d'identifier six types de moulins artisanaux utilisés dans les quatre zones d'étude. En termes d'efficacité d'extraction les moulins semi-automatisés donnent les meilleurs rendements, les plus faibles étant obtenus avec les presses manuelles. Différents types de presseset d'utilisateurs ont été identifiés, à savoir : les propriétaires de moulins, les gérants de moulins, les petits planteurs, et les intermédiaires. Toutes les catégories pouvaient obtenir un important bénéfice de leur activité dans le traitement et la commercialisation d'huile de palme rouge.

De nombreux planteurs utilisaient à la fois les services des presses artisanales et des moulins industriels suivant la taille de leur exploitation et la saison de production. Les intermédiaires ont de plus en plus tendance à stocker l'huile pendant la haute saison, afin de la revendre plus cher en basse saison. Parmi les points négatifs à mettre au débit des presses artisanales, il convient de signaler les faibles taux d'extraction, les presses en mauvais état et très polluantes, l'absence de procédures de contrôle de qualité, les fluctuations du prix de l'huile de palme rouge et l'augmentation inquiétante du vol dans les plantations agro-industrielles. L'étude conclue sur la nécessité d'améliorer l'efficacité d'extraction et les mesures de contrôle de qualité, le besoin pour les producteurs de se regrouper en coopératives, et de développer des partenariats entre petits planteurs et agro-industries.

5. Un partenariat gagnant-gagnant entre les agro-industries et les petits planteurs. Leçons des expériences du Sud-Est asiatique.

La question de recherche du chapitre 5: était :"Quels enseignements tirer des différents modèles de partenariats mis au point dans les pays du Sud-Est asiatique, afin de produire des recommandations politiques pour le développement du secteur palmier à huile au Cameroun?"

Le modèle malaisien de FELDA privilégiait l'accès à la propriété de paysans sans terre ou à la taille d'exploitation non viable. La diversification des cultures avec priorité aux cultures de rente (hévéa et palmier) a également aidé à stabiliser les revenus des colons, au même titre que l'adaptation continue des partenariats à l'évolution des marchés. La priorité était donnée à la distribution de matériel végétal de qualité et à la diffusion des pratiques agicoles modernes issues de la recherche. Une certaine flexibilité des modèles de gestion visait à obtenir les meilleurs résultats possibles. Les conditions de crédit étaient relativement avantageuses pour les colons, qui disposaient d'un délai de 15 ans pour rembourser le prêt initial. L'implication de FELDA dans l'industrie de seconde transformation permettait de donner une valeur supplémentaire au produit principal.

La loi foncière de 1960 interdisait aux colons de revendre ou de diviser leurs parcelles de terrain ou de vendre leur maison. Il interdisait également la vente de FFB en dehors des moulins de FELDA. Le système de gestion par blocs gênait de fait la vente de FFB hors des moulins de FELDA. des colons récalcitrants ou leurs héritiers continuent à vendre les FFB de leurs plantations ailleurs qu'aux moulins de FELDA, particulièrement dans les plantations de deuxième génération. Le suivi des relations de FELDA avec les colons est assuré par un département spécial du bureau du premier ministre appelé Seranta. Le prix d'achat des FFB est fixé par MPOB, en tenant compte du prix du marché international du CPO, de l'origine du matériel végétal, de l'âge des palmiers et du taux d'extraction du moulin industriel. Les colons assurent leur revenu par la vente des FFB de leurs plantations, par les dividendes de leurs actions dans le fonds d'investissement coopératif de FELDA et par des activités annexes.

Mais FELDA fait également face à de nombreux défis, au rang desquels il convient de signaler les retards dans l'installation des colons, la dépendance des colons à FELDA même après le remboursement de leur crédit et l'attribution de leur titre foncier. FELDA est une grande machine bureaucratique avec un système hiérarchique de gestion qui produit des retards sur les décisions les plus importantes. De nombreux modèles ont été développés sans prendre en compte la composante environnementale de l'agriculture durable. FELDA est également accusé de préjugés ethniques, la priorité ayant souvent été accordée aux colons malais. Toutefois, cette unicité ethnique a probablement favorisé la cohésion sociale dans les villages d'accueil des colons.

Le coût de développement par colon, qui inclut la maison d'habitation, l'aide alimentaire de départ, et le développement des plantations de palmiers à huile, est particulièrement élevé

même s'il est en grande partie subventionné par FELDA. Des pénuries de main-d'œuvre ont également été signalées pour les plantations de deuxième génération en raison du vieillissement de la population de colons et du peu d'intérêt de leurs enfants pour travailler dans des zones de plantations enclavées. La fragmentation des parcelles par différents planteurs pose également un sérieux problème à FELDA-Technoplant qui contrôle les opérations de replantation (2^{e} génération).

Des succès intéressants ont également été enregistrés par le programme PIR-Translok, un programme fortement subventiooné par le gouvernement indonésien pour permettre à des paysans sans terre d'accéder à la propriété de plantations de palmiers à huile à haut rendement. Les coopératives villageoises ont joué un rôle important dans les négociations avec les compagnies pour obtenir un meilleur prix d'achat des FFB, le transport des FFB de la plantation au moulin, ainsi que l'achat groupé et la distribution des engrais aux planteurs. Dans certains cas, le grand nombre d'adhérents des coopératives a également permis à certains cadres peu scrupuleux des compagnies de manipuler les coopérateurs. Le titre de propriété de la plantation n'est remis au planteur qu'à l'extinction de la dette. La valeur élevée d'une plantation titrée sur le marché foncier a parfois donné lieu à des ventes effrénées avant même l'entrée en pleine production des palmiers. Les principaux défis du modèle PIR incluent:une centralisation excessive dans la gestion du partenariat avec une approche trop directive ; une négociation non-transparente du prix d'achat des FFB fait entre la compagnie et les coopératives ; les ventes précoces de plantations.

Dans le modèle KKPA, un comité de contrôle des prix d'achat de FFB au niveau provincial s'assure mensuellement que les planteurs sous contrat bénéficient du meilleur prix possible. La priorité pour l'accès aux projets KKPA est accordée à la population indigène locale afin de réduire les conflits inter-ethniques. Par contre, seuls de propriétaires fonciers peuvent participer au programme, ce qui exclue de fait les groupes marginalisés tels que les jeunes sans emploi et les femmes. La coopérative joue un rôle essentiel dans le succès du partenariat, puisque c'est elle qui va servir d'intermédiaire entre les planteurs et la compagnie. Les gouvernements de district jouent un rôle de contrôle et de régulation mais ne participent pas au financement des partenariats. La décentralisation des pouvoirs vers les gouvernements de district a permis de rapprocher le développement de la population et incite les fonctionnaires locaux à favoriser ce type de partenariat. Malheureusement de nombreux gouvernements de district ne disposent pas des moyens matériels, financiers et humains pour jouer pleinement le rôle qui leur est imparti. Des cas de connivences entre les fonctionnaires de district, les élites

et les cadres des compagnies, au détriment des petits planteurs, ont fréquemment été rapportés. Des ventes précoces de plantation et des ventes illégales de FFB à des intermédiaires (pour se soustraire au remboursement du crédit) ont été signalés dans des partenariats mal contrôlés.

6. Vers un partenariat gagnant-gagnant entre les agro-industries et les plantations villageoises au Cameroun !

La question de recherche du chapitre 6 était : « quel modèle peut être développé pour stimuler un partenariat gagnant-gagnant, équitable et durable entre les agro-industries et les plantations villageoises de palmiers au Cameroun? ». L'étude recherche les conditions à mettre en place pour parvenir à un partenariat équitable et durable entre agro-industries et planteurs sous contrat au Cameroun. Elle établit un cahier des charges du partenariat entre les plantations villageoises et les agro-industries, et précise le rôle du gouvernement et des ONG sociales et environnementales pour soutenir ces partenariats.

Pour des plantations villageoises, le partenariat avec des agro-industries leur procurera une occasion unique : d'augmenter le rendement de leurs plantations ; d'obtenir un meilleur revenu ; d'obtenir facilement les titres fonciers qui vont servir comme garantie aux banques pour attribuer un crédit aux petits planteurs. Le partenariat permet également aux petits planteurs d'accéder à un marché plus étendu par le biais de la vente de leur FFB aux moulins agro-industriels.

Pour les agro-industries, sur le plan économique, le partenariat permet d'accroitre les tonnages de FFB livrés à leurs moulins, une manière d'externaliser le travail et de limiter les risques liés à la production, une manière de réduire leur coût de développement. Toujours pour les agro-industries, sur le plan social, le partenariat est vu en tant qu'élément de leur responsabilité sociale envers la population environnante, une manière d'établir la paix et la cohésion sociale, et de contribuer à la réduction des vols de FFB sur leurs plantations. Sur le plan environnemental, le partenariat avec des plantations villageoises pourrait aider le gouvernement à limiter le nombre de permis de conversion forestière accordés aux agro-industries pour leur expansion au détriment de la forêt naturelle. Ces dispositions sont en conformité avec les principes et les critères de RSPO qui demandent aux agro-industries d'établir des plantations pour la population locale et d'éviter l'ouverture de nouvelles plantations au détriment de la forêt primaire.

Au niveau du gouvernement, le partenariat entre les agro-industries et les plantations de palmiers à huile des villageois est vu comme une manière de réduire la pauvreté rurale et d'établir un secteur fort de plantations villageoises. D'un point de vue économique, l'association permet une meilleure collection des impôts et taxes par le biais de la livraison des FFB aux moulins agro-industriels, une augmentation de la production d'huile par l'abandon des moulins artisanaux aux taux d'extraction très bas et de qualité d'huile inférieure, une meilleure utilisation de tous les produits et sous-produits issus des moulins industriels. L'augmentation de la production nationale de CPO devrait permettre de limiter par la suite l'importation de CPO, puisque les 2/3 des superficies de plantation sont aux mains des plantations villageoises. Sur les plans social et environnemental, le partenariat permettra au gouvernement de combatte le vol, et de limiter la conversion de la forêt naturelle pour le développement du palmier à huile.

Pour les ONG environnementales et sociales le partenariat est vu comme une manière d'imposer la cohésion sociale, de combattre et de réduire l'impact négatif qui résulte du développement du palmier à huile.

Quelle organisation pour un tel partenariat ?

De nombreux acteurs devront être mobilisés pour mettre en place un tel partenariat.

Le gouvernement : Le gouvernement doit agir en tant que facilitateur et régulateur du partenariat. Le gouvernement devrait contribuer au choix des parties contractantes, faciliter l'accès aux titres fonciers pour l'agro-industrie et les bénéficiaires du projet, sélectionner les banques privées pouvant accorder des crédits à des taux d'intérêts accessibles, contrôler le coût de développement du projet, contribuer à l'élaboration du contrat, subventionner le coût des intrants, réduire les taxes sur l'importation de matériel agricole et d'intrants non produits localement, éviter les positions de monopole de certaines entreprises, entretenir les routes principales pour l'évacuation facile des produits vers le marché.

Agro-industries : l'agro-industrie devrait créer en son sein un département responsable des plantations villageoises. Cette entité devrait clairement être séparée de la gestion du domaine industriel. Elle devrait avoir son propre budget, personnel, logistique de transport et si possible de l'équipement lourd. Le département plantations villageoises de l'agro-industrie devrait préparer la terre, planter et contrôler la plantation pour les planteurs sous contrat jusqu'à ce que le crédit souscrit ait été remboursé.

L’agro-industrie se doit : de contribuer au renforcement des capacités techniques et managériales des planteurs, en particulier celles des responsables de la coopérative ; d’aider la coopérative et les planteurs à obtenir des titres de propriété ; créer un marché prêt à accepter les fruits frais provenant des plantations des villageois. L'évaluation du prix d’achat des FFB devrait considérer non seulement l’huile de palme mais également d'autres produits comme l’huile de palmiste et les nombreux sous-produits de l’extraction.

Les planteurs sous contrat : les petits planteurs devraient se regrouper dans des coopératives et élire des membres fiables aux principaux postes de responsabilité. Les coopératives serviront d’intermédiaires entre les planteurs et les agro-industries. La coopérative travaille de concert avec l'unité agro-industrielle responsable des plantations villageoises. Après le remboursement total du crédit, la coopérative assurera la gestion de la zone de plantations villageoises, avec l'assistance technique de l'agro-industrie. Tous les FFB produits devront être livrés au moulin agro-industriel. Les paiements aux planteurs pour les livraisons de FFB devront être visés à la fois par la coopérative et par le département des plantations villageoises de l'agro-industrie.

Banque : la banque devra faciliter l'accès au crédit pour les planteurs par l’intermédiaire de la coopérative et de l’agro-industrie, en tant que garantie jusqu'au remboursement total du crédit. La coopérative et l'agro-industrie devront se porter garants du remboursement des prêts souscrits par les planteurs sous contrat.

Pour les instances de soutien, nous avons :

Les instituts de recherche : produire et rendre disponible du matériel végétal certifié aux agro-industries et aux coopératives. Faire connaitre les moyens de lutte efficace contre les parasites et les maladies du palmier à huile. Recommander les types et les doses d'engrais selon l'âge de la plantation et les conditions agro-écologiques pour assurer une production optimale. Recommander les meilleures procédures de gestion des plantations de palmiers à huile avec un minimum de menaces pour l'environnement.

Les vendeurs d’intrants : Rendre disponible en temps et en l'heure les engrais, les herbicides et les pesticides à des prix accessibles, ainsi que l'équipement nécessaire pour leur application.

Les transporteurs indépendants : Assurer le transport des FFB, CPO et produits associés.

Les grossistes et détaillants de CPO et de produits associés : ceci inclut ceux qui achètent et vendent le CPO et les produits associés en aval ou deuxième industrie de transformation, aussi bien que les consommateurs.

Les compagnies en aval : Celles-ci incluent les compagnies qui se servent de CPO, de PKO pour la production d'huile de palme raffinée, de savon et d'autres produits dérivés.

Administration locale : Contribuer à l'entretien des routes principales et des ponts et aider à la collecte des taxes et impôts.

L'aide des ONG sociales et environnementales sera indispensable pour l'évaluation des impacts environnementaux et sociaux (SEIA) de nouvelles plantations villageoises et agro-industrielles. Elles aideront à l'élaboration des consentements libres, informé et préalable (CLIP) entre l'agro-industrie et la population locale dans les secteurs où les plantations de palmiers à huile sont censées être développées. enforcer la capacité de gestion de la compagnie et de la coopérative avec des pratiques environnementales durables. Elles aideront à l'élaboration, au suivi et à l'évaluation de l'exécution du contrat unissant la coopérative, l'agro-industrie et les planteurs sous contrat.

Un contrat légalisé stipulant précisément les responsabilités de chaque partie contractante est indispensable. Le développement de ce contrat devrait se faire de manière participative en impliquant tous les acteurs et avec l'assistance d'une société de consultation indépendante.

Le comité de développement du contrat de partenariat devrait disposer d'un budget ad hoc le développement et le suivi du partenariat pendant sa période immature. Ce budget devrait être approuvé par le gouvernement, suivant les conditions du marché, avec un certain degré de flexibilité en cas d'imprévus pour faciliter l'établissement des titres de propriété des planteurs sous contrat, avec l'aide des services gouvernementaux compétents. Quand ces titres de propriété seront établis, ils seront remis à la banque ayant accordé le prêt, pour servir de garantie jusqu'au remboursement du crédit. La compagnie pour sa part est censée prévoir quelques fonds pour assurer le remboursement du crédit dans les cas de défaillance de certains emprunteurs.

Sachant que A = crédit pour le développement et l'entretien de la plantation de palmiers à huile pendant la période immature ; B = Taux d'intérêt ; Crédit total = A+B/100 (A)

Après une période de grâce de 4 ans, lorsque les palmiers entrent en production, un premier programme de remboursement de 6 ans entre en vigueur. Ceci implique un remboursement par an = (A+B/100 (A)) x % basé sur l'âge du palmier ; alors que le remboursement mensuel de crédit sera = ((A+B/100(A)) x % basé sur l'âge du palmier) x (% basé sur le mois de l'année).

Dans les déductions du revenu des FFB livrés par les planteurs, la priorité devrait être accordée au remboursement du crédit, puis à l'entretien mensuel de la plantation, enfin au coût de gestion de la coopérative. Après déduction de l'ensemble des frais, le solde est remis au planteur.

La compagnie utilise son savoir-faire technique pour développer des plantations villageoises avec du matériel végétal de qualité issu des instituts de recherche. La compagnie gère cette plantation pendant la période immature avant que les palmiers ne commencent à produire. Quand les palmiers commencent à produire, la compagnie continue à contrôler les plantations villageoises mais transfère progressivement ses prérogatives à la coopérative (au rythme de l'amélioration de sa capacité de gestion). Une fois le crédit entièrement remboursé, la gestion des plantations est remise à la coopérative, mais la compagnie sera toujours là pour assister la coopérative en cas de besoin.

Ecueils à éviter :

Parmi les pièges à éviter, en cas de gestion par blocs de parcelles, il n'est pas recommandé que les planteurs connaissent l'emplacement des parcelles qui leur sont attribuées. Cette mesure permet d'éviter qu'ils ne vendent leur parcelle à des tiers avant même que les palmiers n'entrent en production. Un système de rémunération sur titres (share system) peut être mis en place jusqu'à ce que tout le crédit ait été remboursé. Les planteurs touchent alors des dividendes basés sur le secteur ou bloc de parcelles où est situé leur propriété, et les paiements sont effectués collectivement. Les parcelles ne sont attribuées physiquement qu'après le remboursement total du crédit. A ce stade de la production les revenus produits par les palmiers seront suffisamment élevés pour que le planter ne soit pas tenté de revendre sa parcelle. Afin que le partenariat réussisse, les comptes de la coopérative doivent être contrôlés par une entité indépendante sans l'intervention des employés de la compagnie. Un dialogue constant entre la compagnie et la coopérative, et entre la coopérative et les planteurs est nécessaire, dans un environnement transparent et libre de la corruption.

La vente de FFB aux moulins artisanaux par les planteurs ayant remboursé leur crédit peut être évitée par la fixation d'un prix d'achat attractif des FFB, complété par des bonus et primes attribués suivant les quantités livrées et la qualité du produit. Un paiement plus rapide, voire immédiat, des planteurs permettra de compléter le dispositif. Enfin, la collaboration de la coopérative et de l'agro-industrie pour entretenir les pistes de récolte et les infrastructures permettra d'assurer une évacuation rapide de la récolte et d'éviter les pertes de poids et de qualité liées aux retards.

Les clés du succès :

Les conditions devant être réunies pour assurer le succès d'un partenariat équitable et bénéfique aux deux parties ont été réparties en conditions essentielles et en conditions secondaires. Ces dernières ont également une influence sur le partenariat, mais cette influence est loin d'être aussi fondamentale que pour les premières.

Les conditions primaires incluent :

- une volonté politique forte du gouvernement pour réglementer le secteur à tous les niveaux du partenariat
- la mise en place d'un comité dont le rôle devrait être l'élaboration et la légalisation des contrats entre l'agro-industrie et les petits exploitants, le développement et la gestion des projets, l'établissement du crédit et des modalités de remboursement, la suivi et l'évaluation des projets, la fixation des prix d'achat des FFB en fonction de la demande de CPO ;
- une sélection des participants accordant la priorité aux personnes disposant de droits coutumiers sur les terres à développer, et aux personnes marginalisées (pauvres, jeunes, femmes) ;
- une coopérative viable avec des dirigeants compétents et élus ;
- le montant du crédit, les taux d'intérêt, les modalités de remboursement, les obligations individuelles et collectives liant les petits planteurs et l'agro-industrie devront être clairement stipulées dans les contrats, et expliqués aux signataires ; des contrats développés conjointement et légalisés par les pouvoirs publics ;
- l'amélioration des capacités managériales et techniques de la coopérative et des planteurs sous contrat ;
- la création d'un département plantations villageoises au sein des agro-industries ;
- la participation de la coopérative au capital social du moulin industriel ;

- des rendements élevés en fruits ;
- une capacité adaptée du moulin industriel ;
- des routes et des pistes d'accès régulièrement entretenues ;
- disponibilité de travail (de main-d'œuvre).

Parmi les conditions secondaires signalons :

- le choix de terrains favorables à la culture du palmier ;
- une surface minimum par planter pour participer à la coopérative ;
- l'attribution des parcelles postérieurement au remboursement du crédit ;
- la représentation de la coopérative dans le conseil d'administration de compagnie;
- des procédures de règlement à l'amiable des conflits entre planteurs, entre planteurs et coopérative, entre coopérative et agro-industrie ;
- des déductions automatiques sur les ventes pour assurer un fonds de roulement à la coopérative ;
- le contrôle des vols de FFB dans les plantations agro-industrielles et villageoises ;
- prévoir une épargne pour financer la replantation à l'issue du cycle ;
- développer les industries de seconde transformation pour donner de la valeur ajoutée aux produits de la plantation ;
- prévoir un système de primes et de bonus en fonction de la quantité et de la qualité des fruits livrés.

En ce qui concerne la planification des opérations, les points suivants seront nécessaires afin de tenir les délais: la délivrance à la compagnie d'un permis opérationnel du gouvernement ; une évaluation d'impact environnemental et social ; des réunions de socialisation avec les communautés indigènes ayant des droits coutumiers sur la terre ;la sélection des bénéficiaires du partenariat ; élection des responsables de la coopérative ; le développement d'un contrat légalisé par un cabinet d'experts-conseils indépendants, en faisant participer les deux parties ; la détermination des coûts d'entretien pendant la phase immature ; la détermination des coûts d'entretien pendant la phase mature des palmiers ; le début du remboursement des prêts après la 4e année, pendant 6 ans (c.-à-d. jusqu'à la 10ème année) ; l'attribution des parcelles de plantations aux bénéficiaires en présence des services gouvernementaux appropriés ; a remise de la gestion des plantations villageoises à la coopérative après que le remboursement total du crédit.

En conclusion, la mise en place d'un partenariat équitable et gagnant-gagnant devrait assurer les bénéficiaires d'un revenu régulier, créer des opportunités d'emplois connexes et réduire la

pauvreté rurale. Mais pour ce faire, il sera essentiel d'atteindre des niveaux élevés de production et de rendements, des prix d'achat élevés des FFB et des taux modérés de déductions pour coûts de production. Le soutien régulier de la compagnie aux planteurs et l'établissement de bonnes relations entre les parties devrait permettre de réduire les conflits observés jusque-là. Une collaboration transparente et mutuellement bénéfique devrait permettre de contrôler les vols de régimes et inciter les planteurs à livrer leur production aux moulins industriels. Le développement du secteur des plantations villageoises devrait également permettre de limiter la conversion de la forêt primaire en plantations de palmiers à huile. A terme, la fonction de production pourrait être totalement dévolue aux petits planteurs sous contrat, l'agro-industrie se contentant d'assurer la transformation du produit.

Au Cameroun, la présence de nombreuses presses artisanales et d'un marché intérieur important pour l'huile rouge laisse entendre que la mise en place d'un tel partenariat n'est pas une synécure. La tentation sera forte pour les planteurs de ne pas respecter les termes du contrat pour échapper au remboursement de la dette. Pour éviter cet écueil, le partenariat devra mettre en place un système équilibré d'incitations, de sanctions et surtout de formation.

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Résumé : Les conditions du développement durable des plantations villageoises de palmiers à huile au Cameroon

L'effondrement du FONADER (Fonds national de développement rural) qui avait initié les premiers partenariats entre petits exploitants de palmiers à huile et agro-industries au Cameroun, les programmes d'ajustement structurels, la dévaluation du Franc CFA, les crises économiques, et la baisse du prix du cacao et du café sur le marché international, ont conduit à l'émergence d'une nouvelle catégorie de producteurs d'huile de palme indépendants. Ces planteurs de palmiers à huile se sont retrouvés sans soutien technique et ont confié le traitement de leurs régimes aux moulins artisanaux. Les nombreuses difficultés rencontrées par ces petits exploitants se sont traduites par de très faibles rendements enregistrés dans leurs plantations.

Au Cameroun, quatre des sept bassins de production d'huile de palme développés pendant le régime de partenariat FONADER ont été sélectionnés comme sites d'étude. Il s'agit d'Eseka dans la région Centre, Dibombari dans la région du Littoral, Muyuka et Lobe dans la région Sud-Ouest. Les agro-industries respectives sont SOCAPALM, CDC et Pamol.

En Malaisie et en Indonésie, les sites de l'étude comprennent le site FELDA de Besout dans le district de Batang Padang, les modèles PIR et KKPA de PT. SAL dans le district de Bungo, le modèle KKPA de PT. Megasawindo et PT. Musim Mas dans les districts de Bungo et Pelalawan respectivement. La collecte des données a été organisée par l'administration de questionnaires et des interviews répétés avec les différents intervenants dans le secteur, des discussions de groupes, des recherches sur Internet et dans les bibliothèques des instituts de recherche spécialisés, ainsi que par des visites d'observation sur le terrain.

L'étude porte sur l'origine et l'évolution des régimes de partenariat entre les petits exploitants d'huile de palme et les agro-industries, les points positifs et négatifs des divers modèles testés, et les raisons à l'origine des succès et des échecs enregistrés. L'étude a examiné plus en profondeur les forces et les faiblesses des petits exploitants indépendants de palmiers à huile d'aujourd'hui et les raisons pour lesquelles ces petits exploitants préfèrent traiter leurs régimes dans les moulins artisanaux malgré la présence de moulins industriels plus performants à proximité de leurs plantations. L'étude a en outre cherché l'inspiration auprès des expériences positives et négatives de grands projets en Malaisie et en Indonésie, les deux géants de la production mondiale d'huile de palme à travers des études de cas. Enfin, une approche participative prospective sur l'avenir du secteur de l'huile de palme organisée dans trois ateliers au Cameroun, a permis de générer des recommandations de politique sur la voie à suivre pour développer des partenariats équitables et durables entre les petits exploitants de palmiers à huile et les agro-industries au Cameroun.

Au vu de l'intérêt récent manifesté par de nouvelles agro-industries à investir dans le secteur du palmier à huile au Cameroun, et la décision des entreprises déjà établies d'étendre leurs superficies, l'étude signale que pour atténuer les crises sociales et environnementales résultant des conflits fonciers et de la dégradation des forêts, l'approche la plus durable pour développer le secteur serait de réorganiser des partenariats gagnant-gagnant entre les planteurs de palmiers à huile et les agro-industries.

Mots-clés: partenariat, FONADER, FELDA, PIR, KKPA, agro-industrie, petits exploitants, agriculture contractuelle.